THE
AMERICAN ALPINE JOURNAL

VOLUME II 1934 NUMBER 2

CONTENTS

PAGE

The Reconnaissance of Minya Konka
Arthur B. Emmons, III 135

Crillon 1933 ..... *William S. Child* 148

Ascents in the Coast Range of British Columbia
Henry S. Hall, Jr. 156

An American Tyrol (Big Horns) ..... *W. B. Willcox* 170

The Bugaboo-Howser Watershed, Purcell Range
J. Monroe Thorington 184

Winter Climbs in the Alps ..... *Walter A. Wood, Jr.* 192

The Mountains of New Zealand ..... *Kate Gardiner* 202

Climbs in Northern Waputiks
H. S. Kingman and J. M. Thorington 206

Mountaineering in Northeast Greenland ..... *N. E. Odell* 210

The First Ascent of Dungeon ..... *Edward L. Woolf* 215

New Routes on Familiar Canadian Peaks
Georgia Engelhard 222

PROCEEDINGS OF THE CLUB 226

REVIEWS 246

NOTES 254

The price of the *Journal* is $1.50 per copy.

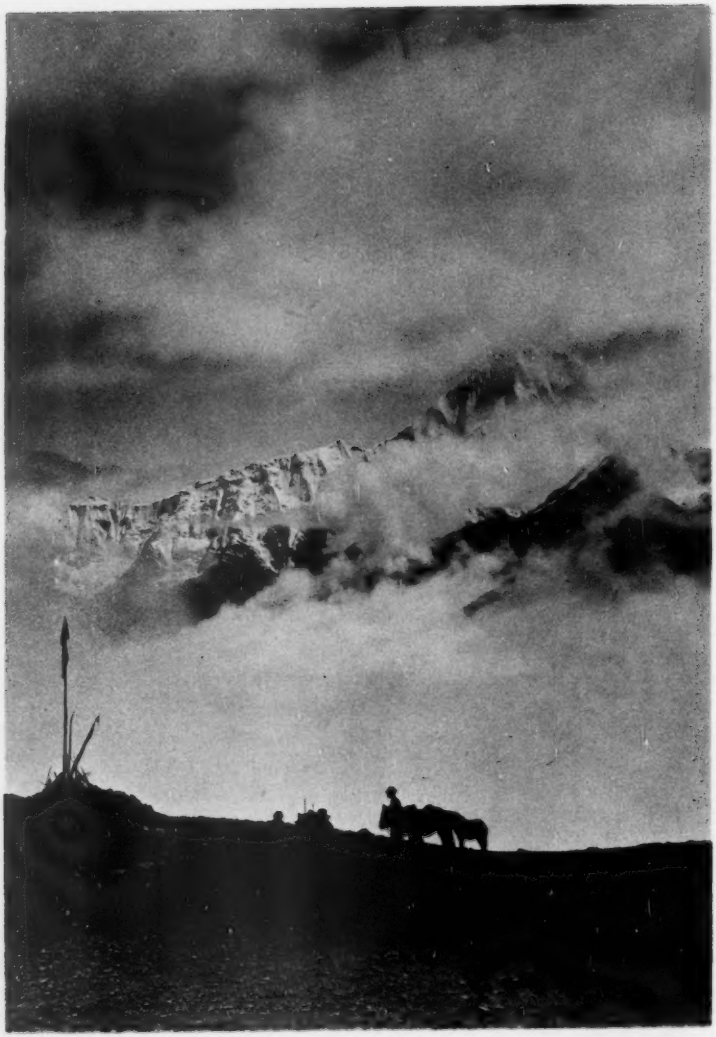


Photo A. B. Emmons

MINYA KONKA FROM SUMMIT OF THE TSEME LA (15,288 FT.)

THE

AMERICAN ALPINE JOURNAL

VOLUME II 1934 NUMBER 2

The Reconnaissance of the Minya Konka

ARTHUR B. EMMONS, III

ON the southeastern borders of Tibet, where the high plateau drops abruptly down into the fertile plains of Western China, lie several ranges of peaks which are generally looked upon as a continuation of the main Himalayan chain. At about 29° 30′ North latitude and 102° East longitude, not far from the great river trenches of the Salween, Mekong, and Yangtse, extends a most conspicuous and spectacular, though little-known massif, that of the Minya Konka (24,900 ft.).

During the past decade the region has been visited by several expeditions, notably those of Dr. Joseph Rock and Arnold Heim, and the mountain had been known to missionaries of that region for a number of years previous. No attempt had ever been made to climb the Konka, and those who were familiar with it pronounced it unclimbable. No accurate information as to its altitude or its exact position had ever been published.

In the spring of 1932, an expedition was organized consisting of Terris Moore of Haddonfield, N. J., Jack T. Young of Canton, China, Richard L. Burdsall of Portchester, N. Y., and the writer from Dover, Mass. It was called the "Sikong Expedition," a name derived from the province of southeastern Tibet which we intended to invade. The expedition had for its purpose three main objectives—a complete and accurate survey of the Minya Konka Range, an attempt to climb the Minya Konka, and the collection of zoological specimens along the Tibetan border.

Terris Moore has already written an account of the ascent of the Minya Konka,[1] so it is my intention here to present only

[1] *A. A. J.*, ii, p. 1. It now appears desirable to present this description of the admirable preliminary work of the expedition.—*Ed.*

the salient features of the two months of survey work and reconnaissance that preceded the climb.

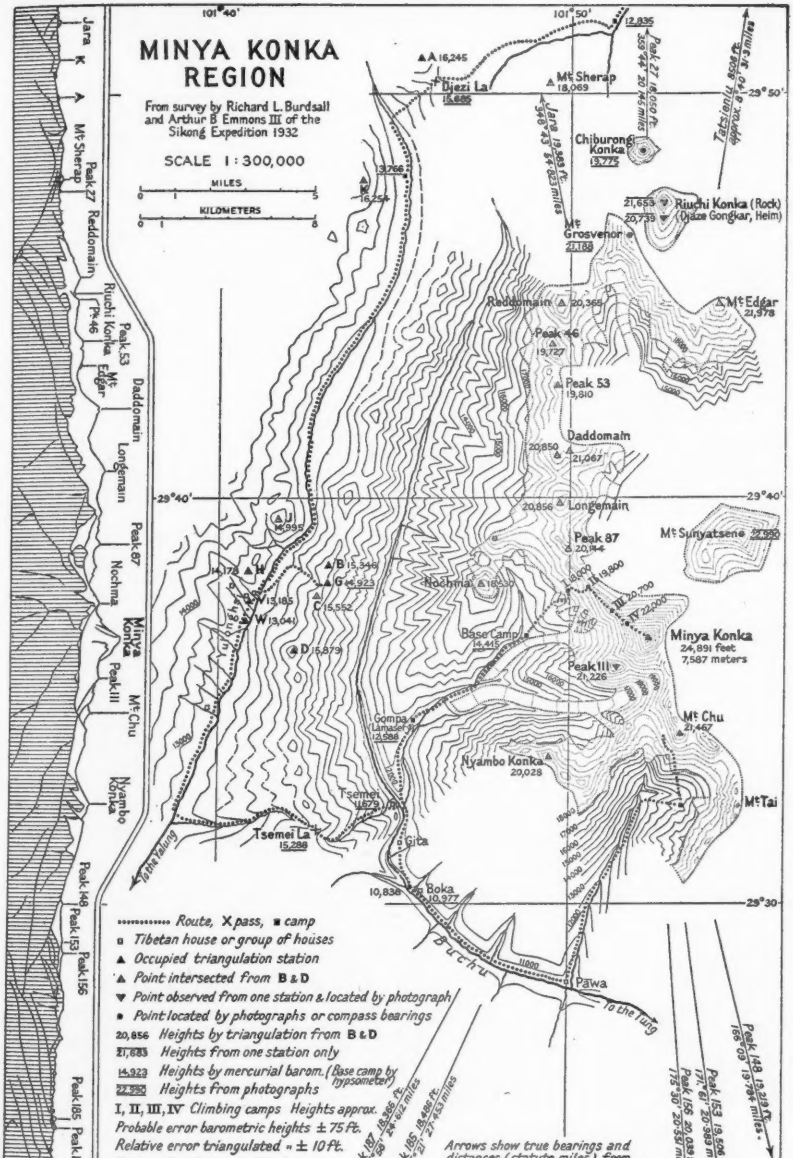
In June, Burdsall and I, constituting the surveying party, left Shanghai for Tatsienlu, a small town on the Tibetan border which was to be the headquarters for the expedition, leaving the other two men to conclude some last minute affairs in Shanghai before rejoining us in Tibet.

In the six weeks required to reach our destination we covered nearly 2,500 miles and crossed the entire breadth of China. For twenty days our Yangtse River steamer churned its muddy way up through magnificent towering gorges, past small straggling towns, some of which were reported to be in the hands of Communists. At length the hills gave way to plains of rice paddies, and we found ourselves in the great plain of Szechuan Province, the garden spot of China, and one of the most fertile valleys in the world. The head of navigation proved to be Kiating, a rather large town lying at the confluence of the Ya and Tong rivers.

The road from here boasted a bus, such as it was, but after a day's ride of one hundred miles we were relegated to rickshaw travel. The foothills rise abruptly from the plains at Yachow. Here it was necessary to obtain a guard of soldiers from the magistrate, as the road to Tatsienlu runs through much wild country inhabited by bandits. Burdsall and I walked this stretch with a caravan of twenty coolies and our guard. In eight days' march, we crossed two 9,000-ft. passes and covered nearly two hundred miles.

Arriving in Tatsienlu on July 23rd, we were most hospitably received by Dr. Cunningham and his wife of the China Inland Mission. They not only gave us lodging but rendered inestimable help in organizing a yak caravan for the trek south through Tibet to the mountain, and later saw that supplies were sent out to us at regular intervals.

After four days spent in Tatsienlu overhauling and repacking equipment, we took leave of this last vestige of civilization and began the last stage of the journey. The track began to climb at once, the first day's ride bringing the caravan well up into a pass known as the Djezi La (15,700 ft.). The next day, on crossing the pass, we obtained our first view of the snow peaks. The Konka remained hidden in a mantle of clouds, but some of the subsidiary ranges were visible. One of the most striking of these,



Courtesy of the Geographical Review, *published by the American Geographical Society of New York*

later identified as Rock's Chiburongi Konka (his elevation: 19,000 ft.), was a beautiful tapering spire rising immediately to the south of the pass. It is undoubtedly one of the most beautiful peaks of the range despite its relatively small size, and it served not a little to whet our appetites for further exploration.

On the fourth day the trail traversed a high upland valley, that of the Yulong Longba. We were now in typical Tibetan plateau country with broad rolling grassy hills over which large herds of yaks grazed. These herds were tended by families of nomad Tibetans, whose large black yak-hair tents dotted the valley floor. They seemed most friendly and on several occasions prevailed on us to accept the hospitality of these smoke-filled abodes. They are fine upstanding people of rugged physique, and differ greatly from the opium-sodden Chinese of western Szechuan. Their principal source of livelihood is embodied in the herds of shaggy yaks which in devious ways provide them with food, shelter, and clothes. We looked forward with great pleasure to the months we were to spend among these hardy people.

As the afternoon wore on we sighted the village of Yulong Hsi where it was planned to establish a headquarters for our survey work. After a bit of preliminary exploration it was decided to place our base camp on a range of hills beside a small lake at 15,000 ft., directly facing the Konka range across a deep valley.

Triangulation stations were then located on two adjacent hills and a mile base-line laid off in the level Yulong Valley. It is hard to refrain from rhapsodizing on the view from these survey stations. Superb, magnificent, sublime—any adjective would seem futile in describing it. Our enthusiasm knew no bounds. A more ideal location for the work would have been hard to conceive.

The range of hills ran roughly north and south and was flanked by two steep-walled valleys several thousand feet deep. For the entire sweep of the eastern horizon the eye was dominated by the snow-clad Konka Range, its flanks and buttresses dropping away into the valley almost at our feet. Far to the south rose several other massifs scarcely less impressive. These had about them an air of mystery and loneliness, for on all existing maps the region in which they lay was marked "Unsurveyed." Two giant pyramids in particular aroused our interest, for they seemed to rival even the Minya Konka in altitude. We named them the

Photo T. Moore

THE RANGE OF THE MINYA KONKA AT A DISTANCE OF FORTY MILES

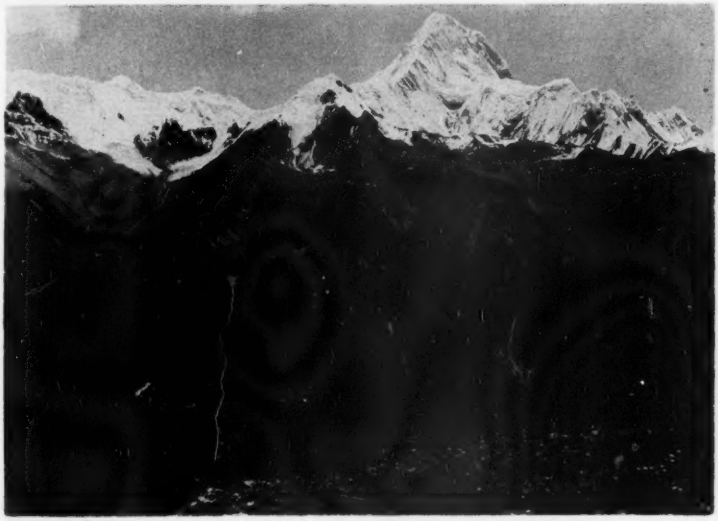


Photo A. B. Emmons

THE MINYA KONKA FROM A SURVEY STATION (15,879 FT.) TEN MILES W.

Ridge ascended is left center

Photo A. B. Emmons

EMMONS TAKING SURVEY DATA WITH A THEODOLITE.
Minya Konka in the background.

Photo T. Moore

SOUTHERN EXTREMITY OF THE MINYA KONKA RANGE
FROM 20,000 FT. ON RECONNAISSANCE

Cathedral Peaks, and they later proved to be in the vicinity of 20,000 ft.

West of us lay range on range of brown grassy hills stretching away to the blue haze of remote horizons in the far interior of Tibet. Several peaks, which we later descried from high on the Konka, lying to the southwest, were now out of sight; those we believed that Rock described as the Konkaling Peaks or the Holy Mountain of the Outlaws, the Konka Risumgongba[2] (Rock: *ca.* 20,000 ft.).

As we swung the telescope of the theodolite farther west another stately range was discernible, which we believed to be the so-called Kanze Range, 150 miles away. Off to the northwest rose a gleaming mass of glaciated rock surmounted by a mighty shaft of rock and snow, the Zhara Shan, believed by the local tribesmen to be higher than the Konka. It stood out by itself, a solitary monolith unsupported by any subsidiary ridges, and it was easy to see why the Tibetans exalted it to a position comparable to that of the Konka. Heim had given the altitude of the Zhara as 19,000 ft. which compared favorably with ours of 19,383 ft. It was fifty-six miles distant from the nearest triangulation point.

The weather favored us beyond our fondest hopes, and by the third week in August all the necessary observational data had been acquired. Over twenty-five major snow peaks were measured by theodolite, ranging from 18,000 to 23,000 ft. and terminating in the Minya Konka which our field calculations showed to be 24,891 ft.[3] in elevation. These altitudes were based on a series of mercurial barometer readings over a long period and compared with a simultaneous series taken at the nearest *known* elevation. The position work was done with the use of time signals by radio. The data thus obtained have been turned over to the American Geographical Society,[4] which very kindly loaned us their instruments.

---

[2] *Nat. Geogr. Mag.*, July, 1931.

[3] The figures previously presented in *A. A. J.* for the altitudes of the peaks in the Konka Range, due to an error solely in the assumption of the original standard sea-level conditions upon which the barometer readings were based, have now been universally amended to read approximately nine hundred feet higher.

[4] *Geogr. Rev.*, Jan., 1934.

The arrival of the monsoon coincided with the completion of the survey work, and as our interest now turned toward mountaineering, its accompanying bad weather was decidedly unwelcome. But time was precious and we could ill afford to wait for it to depart six weeks hence.

The Konka presented from the west a most spectacular appearance, rising high above its neighbors. It resembled a slender granite pyramid and seemed to soar to unbelievable heights in a series of huge precipices and jagged Himalayan ridges. There were decided faces on all four cardinal points of the compass. The northern and western slopes fell away almost sheer for thousands of feet, and one glance was enough to destroy any belief in the feasibility of their ascent.

Perhaps the most outstanding feature of the mountain from this side, however, was presented in a bold steep ridge on the northwest, descending from the summit to about 21,000 ft., where it was separated by a short gap from a long high spur running northward. In this ridge lay the only glimmer of hope in what was visible from the survey camp, but it presented so formidable an appearance and so many problems that it was considered only as a last resort.

Although we had avidly consumed all the available literature and photographs, no information or description of the southern or eastern reaches of the Minya Konka could we find. The reason for this is obvious in that, aside from the general remoteness of the massif, the range runs in a north and south direction, and approach from the east being difficult, those slopes had remained obscure. In fact the Konka is so well guarded by secondary peaks of the 20,000-ft. caliber that a thorough reconnaissance from any side but the west was a most arduous task. The Konka system has been aptly defined as not a range but a "complex," and a complex it most emphatically is!

Burdsall and I had decided to do as much preliminary reconnaissance as we could before Moore and Young joined us in the middle of September. To this end we had brought complete equipment and food supplies for nearly a month's ice and snow work. Before a conservative attempt could be made via the northwest ridge, it was necessary that the enigma of the south and east faces be solved. Hence our watchword became, "To the East! to the East!"

We packed away the surveying instruments and assembled a yak caravan. Bidding farewell to Yulong Hsi we travelled a day's march south and then, after crossing the Tseme La (15,288 ft.), descended steeply into the valley of the Büchu which flanked the range on the west, then turned abruptly east at its southern end.

A day was spent at a small lamasary, the Konka Gomba, perched on a mountainside overlooking the snout of the Konka's great western glacier. Here a closer and less misleading view of the northwest arête was available. From this new angle it appeared somewhat less steep, the slope varying somewhere between 35 and 50 degrees. Several ice buttresses of no mean proportions broke the skyline, presenting unwholesomely steep pitches in the event the ridge proved too sharp to prevent turning them. Then, too, there was always the problem of the gap which took on an even less pleasant aspect. No, this route was assuredly not a thing to take liberties with, and we labeled it, "For Emergency Only."

Continuing southeast along the Büchu River we came at length to the Tibetan hamlet of Boka. Here the trail for all purposes ceased to exist, and our yaks could go no further. A base camp was pitched beside the rushing Büchu. For several days thereafter I essayed a little exploration, unaccompanied by Burdsall who had blistered feet, and found that our position was still considerably to the west of the summit and that we were shut off from it by the barrier range of the 20,000-ft. Nyambo and its neighbors.

Taking a light kit and food for eight days, we back-packed eastward along the Büchu for eight miles to the mouth of another valley I had found, running north into the very heart of the complex. Our objective then became to gain its headwall and investigate the situation from there. In the course of five days of rain we worked our way up along this new valley, dispensing with porters as we needed the added acclimatization which packing at this altitude would give.

When the weather finally cleared we found ourselves in a magnificent cirque of peaks, several of which rose nearly sheer to over 21,000 ft. A camp was pitched at 16,000 ft. in a glacial basin. I then proceeded to indulge in the luxury of a day off incurred through a slight attack of snowblindness.

September 7th dawned clear and the reconnaissance party set off for a col in the north wall at about 20,000 ft. The easiest line of approach lay across a secondary glacier which had its source in the col, and despite several rather formidable icefalls which we hoped to outflank, the ice for the most part was but little crevassed. Three feet of fresh snow and our lack of acclimatization produced the inevitable result that after eight hours of steady plugging we were forced to turn back at about 18,000 ft. without glimpsing the Konka at all. Food was running low, but we eked it out hoping for good weather in which to make another try for the col now that a trail had been broken. But no such luck. A snowstorm made a return to Boka for fresh provisions imperative, without a second chance for a try at the col, though the camp was left intact for a later occasion.

Moore and Young arrived at Boka on September 19th with additional supplies and equipment. They had followed our footsteps the entire way and had been seven weeks on the road. After a council of war, it was decided that Moore and I should continue the work of the reconnaissance, while Burdsall and Young spent their time in adding to the zoological collection, which up until now had been sadly neglected. Then, when a route had been chosen, we would combine our efforts in an attempt on the summit.

Accordingly Moore and I took our leave and returned to the cirque. This time the trip was made in two days, and upon reaching the camp we were delighted to find that much of the fresh snow present on the former occasion had now melted. In fact the weather in general was so much better, that the baleful influence of the monsoon seemed at last to have departed entirely.

The day following our arrival dawned beautifully clear, and Moore and I set out for the col in high spirits. We followed the general trend of the glacier but varied the route slightly over the former one. The glacier presented a good crampon surface and we made fast time, reaching Burdsall's and my high point by 10.00 A.M. Just above here we struck the first of the icefalls and by dint of a bit of step-cutting penetrated it for several hundred feet, where the way became effectively blocked by a huge transverse crevasse.

Retreating a short distance, we traversed some distance to the right and finally passed the fall on an avalanche fan. These fans

Photo A. B. Emmons

SOUTHERN EXTREMITY OF THE KONKA RANGE FROM 16,000 FT.
Sharp peaks in the center reach elevation of 21,467 ft.

Photo A. B. Emmons

PEAKS IN UNEXPLORED TERRITORY FROM 16,000 FT.
S. W. OF KONKA MASSIF

Photo A. B. Emmons

HEADWALL OF CIRQUE FROM SITE OF RECONNAISSANCE CAMP
(Much foreshortened)

we had religiously avoided until now, as judging from the size and frequency of the avalanches descending into the cirque from all sides, they seemed veritable death-traps. As the walls above this one were still in the shadow, however, we considered it a legitimate risk in chancing it.

After crossing a small plateau, another fall similar to and of greater extent than the one just encountered blocked the way. By dodging seracs and making use of a snow bridge we worked our way to the base of an ice couloir which seemed the only means of surmounting a 50-ft. ice wall. It was menaced by several insecure-looking ice blocks and was steep enough to require hand-holds in several places, but Moore who was leading at the time, seemed undaunted and the thing went all right with fifteen or twenty steps, while I belayed from below.

This couloir gave on another plateau which had been formed largely by avalanche débris. This was crossed as rapidly as our failing breath would permit, and when we were safely out of range of anything coming from above, rest and lunch seemed in order.

We soon pushed on, however, as clouds were beginning to mass themselves up from the south and we were much afraid of missing our coveted view from the col. Now followed about eight hundred feet of steep snow lying at 50°. Fortunately there was a good crust and we were able to kick steps for the remainder of the distance to the top of a shoulder flanking the col on the east without difficulty.

We were delighted to find that, while a few clouds swept across the ridges to the north, they by no means shut out the view. I was disappointed in observing, however, that the summit lay only 15° to the west. We had hoped that the angle would be at least 45° to ensure a complete exposure of the east face.

We stood only about two miles away from the base of the south face which dropped sheer for 4,000 ft. nearly devoid of snow. A jagged razor-back ridge ran from the southeast and connected with the peaks of our cirque in a series of awesome crests topped by fantastic ice-cornices. Through a break in this ridge the eye traveled across the precipitous east face to the northeast arête. It did not require much perception to see the chances of a successful attack on these two sides were but nil!

Somewhat dejectedly we turned our backs on the Konka and a chill wind that swept through the col and sat down to munch a piece of chocolate. The view to the south was magnificent. Across the cirque lay range after range of billowing peaks as far as the eye could see. We looked especially for the mysterious Mt. Tseme with the binoculars, for if it existed at all it would surely have been visible from this coign of vantage at 20,000 ft. No peak which could even vaguely tally with its bearing and description presented itself. We concluded its existence a myth.

After taking a round of magnetic-compass bearings to augment our survey map, we left the shoulder at 3.30 P.M. The descent to the first plateau was made in short order as only in one or two places were belays necessary. I was leading across an avalanche fan, when both feet broke through a small snow-covered crevasse only a few inches wide. I fell in such a way as to sink a point of my left crampon deeply into my right leg just above the knee. Fortunately the steel point missed the knee-cap and also cut no tendons. I dressed the wound hurriedly from a small first-aid kit, as we were in the line of fire from an avalanche couloir, and we proceeded.

Luckily I was able to walk, although somewhat stiffly, and after an awkward time with the couloir and in one or two places in the icefall below, we reached camp safely in three hours. The day's accomplishment in some ways had been thoroughly satisfactory. We now knew exactly what the situation was in regard to the Konka on this front. Our sole line of attack, however unpromising, clearly lay in the northwest arête; no uncertainty on that point remained. We felt agreeably pleased with the extent to which we had acclimatized, having climbed without undue effort 4,000 ft. to an altitude well above 20,000 ft. in six hours.

It was decided that the reconnaissance camp should be evacuated at once, both because our work in this locality was finished and because I was anxious to get back to the base camp before any complications should develop in my leg. Taking loads limited to forty pounds, the residue of the supplies being left for porters to retrieve later, we returned the entire distance to Boka in one day. Thus Moore and I accomplished in four days what Burdsall and I had failed to do in ten. So does the factor of weather in Himalayan mountaineering play havoc with the best laid plans.

When our sad news had been imparted to the others, a council was held. It was now September 25th. We calculated that we could not hope to be within striking distance of the top for at least another month, an almost unprecedentedly late date for such high altitude work, when winter storms would have commenced. We had but little faith in our ability to carry a camp high onto the northwest ridge judging from what we had already seen of it. To further complicate matters, our faith in the local men as porters could hardly be described as implicit, and it was foreseen that most, if not all, the high porterage work would have to be done by the sahibs.

But there was no harm in trying, and if the Konka proved too much for us, there were several interesting peaks of more moderate altitude to the north which would make fair prizes in themselves. Thus we determined to carry on the campaign and transfer the theater of operations to the west and north. Burdsall and Young returned to the reconnaissance camp accompanied by several porters while Moore and I returned to the lamasary to conduct a further investigation from that point.

My leg was now healing with no alarming effects upon my walking ability. It is a fortunate circumstance that the ice on high mountains renders steel crampons sterile, for no sign of infection developed in the wound. There was great hope that by the time the assault began the leg would be completely healed, and such proved to be the case.

Moore and I were again welcomed cordially by the lamas, and were given a large room in the lamasary to use as a general headquarters for the climb. When they heard, however, that we intended climbing to the summit of their sacred Konka, they became somewhat less enthusiastic, believing apparently that our purpose in so doing, far from being altruistic, was to obtain a fabulous lump of gold they claimed reposed on top. They felt that its removal might displease the spirits of the upper regions, whom it was their duty at all times to placate. We diplomatically calmed their fears by assuring them that the Konka's gold reserve would remain untouched. Superstition of this kind is only one of the many inherent, and at times exasperating, aspects of mountaineering in Tibet.

The two of us, on the day following our arrival, climbed a shoulder behind the lamasary to a point at about 17,000 ft.,

whence a closer view of the northwest ridge and its approaches was available. We picked a route to the top of the spur at a point where it seemed most accessible. Through the binoculars the slopes of the spur looked unpleasantly steep and prone to avalanche, but remembering the axiom that a mountainside is never what it seems until one is actually on it, we drew no definite conclusions. The upper part of the ridge above the gap looked less fearsome, and it was encouraging to note that there seemed a possibility of circumventing the worst problems by going out on the north face. The gap was still a source of worry but until we were actually confronted by it there was no use in drawing premature conclusions.

On returning to the lamasary, Moore set off for Boka to assist in dismantling the camp there, while I took it upon myself to explore the glacier valley in the hope of finding a suitable track to the foot of the spur and a site for a climbing base. This I did the following day, scrambling over four or five miles of lateral moraine until I discovered a beautiful little meadow lying at the very base of our shoulder. It lay at an altitude of 14,500 ft., and being well sheltered from the wind and abundantly supplied with both firewood and water, it made an ideal place for the base camp. Its one drawback was the fact that it was rather difficult of access for laden porters and to reach it one must ford a swift glacial torrent. The spur seemed to offer on closer inspection a more varied choice of routes than we had heretofore suspected. I regained the lamasary feeling definitely more optimistic about the whole situation.

Loads were sorted and made up. October 2nd saw a small column of four laden sahibs and six porters making its laborious way over the rough moraine toward the foot of the lofty northwest shoulder. The opening gun of the siege against the stronghold of the Minya Konka had been fired, and the fight was on!

In the month that followed we pushed ahead the line of four camps to an altitude of 22,000 ft. on the main summit ridge, and on October 28th, Moore and Burdsall returned to Camp IV from the summit, victorious.

BIBLIOGRAPHY

Books:

"Die Wissenschaftlichen Ergebnisse der Reise des Grafen Bela Szechenyi in Ostasien 1877-1880." (Vienna, 1898.)

Capt. Wiliam Gill, R.E., "The River of Golden Sand." (London, 1883.)

Ernest H. Wilson, "A Naturalist in Western China." (London, 1913.)

Eric Teichman, "Travels in Eastern Tibet." (Cambridge, 1922.)

J. W. and C. W. Gregory, "To the Alps of Chinese Tibet." (Philadelphia, 1924.)

Locy, "In the Far East."

Theodore and Kermit Roosevelt, "Trailing the Giant Panda." (New York, 1929.)

Arnold Heim, "Minya Gongkar." (Berlin, 1933.)

Periodicals:

J. H. Edgar, "The Ganka—a Peak in Eastern Tibet." *Jour. West China Border Res. Soc.*, iii, 1926-29.

"The Mountains about Tatsienlu." *G. J.*, lxxxv, No. 4, Apr., 1930.

Joseph F. Rock, "The Glories of the Minya Konka." *Nat. Geogr. Mag.*, Oct., 1930.

Arnold Heim, "The Structure of the Minya Gongkar." *Bull. Geol. Soc. China*, xi, No. 1, 1930.

Terris Moore, "The Ascent of Minya Konka." *A. J.*, 45, p. 290.

Arthur B. Emmons III, "The Conquest of the Minya Konka." *China Jour.*, xix, No. 1, July, 1933.

Richard L. Burdsall, "The Altitude and Location of Minya Konka." *Geogr. Rev.*, xxiv, 118.

Crillon 1933

William S. Child

EARLY, on a June morning, after a 150-mile boat trip from Juneau, high above the great La Perouse glacier we caught our first glimpse of Crillon, 12,730 ft., the highest unclimbed peak of the Fairweather Range. By rarest good luck a rift in the clouds showed Crillon's mighty summit gleaming white against the blue. Then, later, as the tide rocketed us through the narrow entrance of Lituya Bay, the surrounding peaks threw off their cloud blanket and stood out sharp above the Sitka spruce of Cenotaph Island.

The close of June found our 2,400 lbs. of supplies and equipment at Lituya Bay, ready for air transport to our base at Crillon Lake, three hundred feet above the sea. To this glacial lake, over three stiff miles of seracs and moraine, the five members of the advance group back-packed a canoe, that later proved invaluable for the surveying and geologic work. The four other members of the party arrived on July 1st by airplane and with it transfer of equipment to the base camp immediately began. By this means, two or more weeks of gruelling pack work was eliminated.

Pitching the base-camp, checking and arranging food-bags, installing weather-bureau and radio, went a bit slow, for every few minutes a thunderous roar would bring us up, standing, to watch some huge pinnacled serac crash from the glacier face into the milk-green lake.

On July 2nd, the party, comprising six climbers and three geologists, packed 50 lbs. apiece over bear trails and gravel flats to the "Klooch" glacier, where uncertain footing on moraine-covered ice helped to fit us for harder work to come. Before and high above us was the "Knoll," a small peak of much grandeur, its lower snow-fields cut by a sheer cliff down which fell great waterfalls. Over this peak our only route lay, but first we pitched our second camp on Alpine meadows bordering almost permanent snow at 2,200 ft. This camp marked the first of five stages to the foot of the upper Crillon cliffs, the bases being advanced by the usual polar method. Our second pack was over "Ptarmigan Dome," where despite considerable snow on the northern side, we found bare places with clumps of cyclamen and blue lupine

Photo B. Washburn

MT. CRILLON FROM A PLANE AT 6000 FT. OVER THE PACIFIC OCEAN.
WILLOW LAKE IN LEFT FOREGROUND

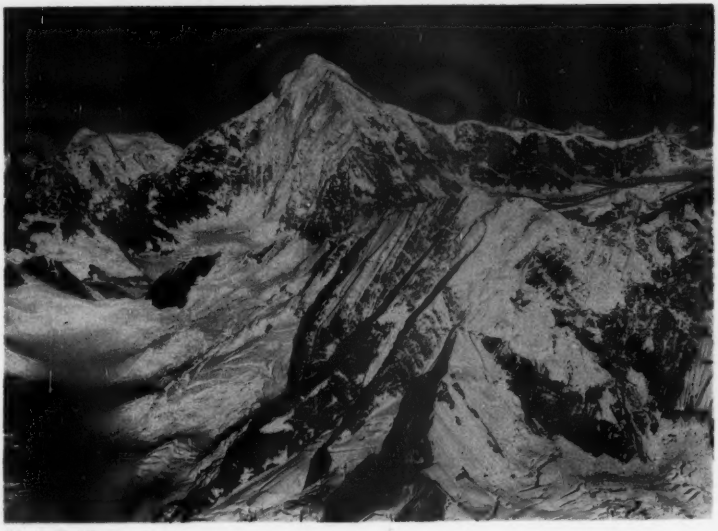


Photo B. Washburn

N. E. FACE OF MT. CRILLON FROM THE AIR

Photo B. Washburn

W. FACE OF MT. FAIRWEATHER FROM PLANE AT 9,000 FT.

Photo B. Washburn

MT. ST. ELIAS FROM PLANE OVER MALASPINA GLACIER

knee-high. Heavy clouds, almost never absent, in early July veiled the valleys north and south, and the Pacific. Up a 1,000-ft. slope of soft snow we trudged, on to a narrow ridge of loose rock leading to the "Knoll" summit. Below the precipitous crest, but above the lower cloud level, Dagelet, "False Dagelet," and La Perouse, showed wraith-like through thin mist.

For the future packer, indeed for the climber, the last pull up the "Knoll" will require careful foot-work, and if heavy loads are carried, a fixed rope will prove of great assistance. The ridge is composed of loose, crumbling rock. For more rapid transport we used a rope-rail, but balance was still tricky when carrying 65 lbs. of supplies and a pair of skis on one's back.

Our first snow camp was pitched on a wind-protected snow-bench below the ridge but close to the "Knoll" summit. Thick cloud made it hard to judge how far to place the tents from the ridge to avoid snow-falls from its cornice, and at the same time how far it was safe to go out on the rounded snow-edge which overhangs the great ice-fall below. When the weather cleared, we found ourselves perched on the brink, but the place seemed safe despite ominous cracks heard at night. Late that same day every vestige of cloud blew away, and there, before us, over the shoulder of a distant ridge rose Crillon, stainless white against deep blue. To the north stood a sharp unnamed peak with its plume streaming, to the west the wedge-shaped cliff of "Klooch"—unique in that it is half-black, half-reddish in sharp contrast—while below and behind we caught glimpses of Crillon Lake, dark green forest, then, five miles away, the white surf line of the Pacific. Thirty miles to our west the sheer sides of Lituya and the mighty bulk of Fairweather drew our eyes, but most thrilling of all was to see, far off, far up in the sky, though 175 miles away, the mighty pyramid of Mt. St. Elias.

Alaskan mountain weather is unpredictable—a northeast wind in this section being perhaps the best augury for clear weather. With this wind blowing, our first reconnaissance party, Washburn, Bates, and Houston, started out. Their purpose was to try to discover whether we could pack across the crevasses on "Klooch Corner," and to mark a safe route with willow-wands up the great glacial valley to the foot of the "South Col." Beyond this, they were to search for a route up the cliff that completely surrounds

the upper plateau of Crillon. This they did after first attempting a false route up the cliff.

Essaying the steeper rock-part, they crossed a wide schrund, and worked up two-thirds of the cliff—six hundred feet of extremely difficult and dangerous going, reaching an overhang so brittle that they were subject to a continual barrage of loose stone. This slope averages over 50°, and in places is as much as 65°. The whine of small falling stone is almost continuous there, but from below this appears to be the only possible route on to the plateau. After this we ruled out the bare rock of the cliff for safe climbing or packing. Much discouraged we awaited good weather and on July 14th left camp at 9 P.M. to travel on crusted snow all night up the valley to and over the "South Col" to the foot of the cliff. We rested and ate there that we might make an early attack on the one other possible route up the cliff before the snow loosened. This night march was memorable: There were only four hours of twilight darkness, as we followed the trail of willow-wands. The dead silence was broken only by the slight scuffing of the skis. Ahead of us were the black cliffs of Crillon with their white frosting. To the north were scattered dim high peaks in great profusion. We were reminded of our proximity to the Arctic Circle, for behind Mt. Fairweather the sunset flush remained all night until sunrise replaced it. Crillon was clad in a nightcap of cloud.

Four o'clock found us zig-zagging up the 30° slope of the "South Col" to rest at its top, adjust our packs, and ski down to the foot of the ice-cliff. Eating a luxurious breakfast of chocolate, walnuts, and sardines, we studied the 1,000-ft. cliff-face carefully. This was our only possible route up the cliff; if we failed here our chance to climb Crillon would be gone.

We finally decided to follow up an avalanche gully, thence over a conspicuous spur of rock, even though the face-angle beyond appeared forbiddingly steep; for the uppermost third seemed smooth snow though topped by a formidable cornice.

Washburn, Everett, and I started on the first rope, over broken snow-blocks and avalanche débris. The schrund was negotiated by a *court échelle,* Washburn standing on Everett's back; we following with his help, the gap to the upper lip being some six feet. For the first third of our way, we sank in knee-deep though the angle is 45°. Going slowly and carefully, digging our axes in

deep and belaying around them, we worked upward and across the avalanche chute we were following and reached the rock ledge one-third of the way up. Below, the party on the second rope had waited and were negotiating the schrund. The snow now grew harder, affording better going than the rock as our crampons bit in well. The slope grew steeper and steeper, but one could spare a glance at the far-off, robin's-egg blue Pacific, and at the terrific bare cliff of Dagelet, heavily corniced at its top. We could now see our own cornice above, apparently close, but really further than the four rope lengths it seemed to be away. All rock had disappeared and our steps were partly hacked, partly kicked out, the ice in the steps just matching in color the distant sea. Over nine hundred feet up and the angle 57°, it was exciting enough between Everett's boots to see Washburn as he leaned out to scan the snow-cornice, then hack and hack to make a hole through it. He reached up, fixed his axe firmly, and eased himself through and out on to the great plateau. What a lusty shout of joy and wonder came from him! Everett followed, and then came the great moment for me, as I climbed through the hole to meet their exultant faces and to see with them the most thrilling sight of my experience. Before us lay the tremendous expanse mile on mile of the upper plateau. Two large peaks, whose existence was wholly unguessed by us, lay across a shallow valley at the east while Crillon's summit, silvery and inviting, beckoned from the north.

No human foot had ever been set before on that great desolate field of snow, and no human eye had seen anything but its rim.

Presently, the second rope joined us, and we started towards Crillon, seeming to get nowhere in that vast plain. We lunched below the "Plateau Peak," which rises from the plateau above the "South Col," and from it studied the formidable shoulder running to the "Col" below, in the hope of an easier route for possible later use, but the rock was too rotten to trust. A sudden snow-squall and thickening cloud now warned us to turn while the snow was still firm enough for our descent. On the ice-cliff, we drove in rappel pickets, four in all, with four hundred feet of fixed rope attached. With this aid we descended in dangerously soft snow and at last reached our skis below the cliff. We were thankful for our safe return at that late hour of the day, but regretted the shift of weather.

However, as it was, the return to camp was a nightmare, for it was then 1 P.M. and we had been on the go since the previous evening at 9. It was curiously windless and hot, the glare was terrific, our skis sank four inches in a wet slush and our packs cut into our shoulders. The only compensation was the sight of continuous enormous avalanches on either side of the valley, hurtling over thousand-foot drops. At last, after thirty-six hours of travel, bothering little about food, we tumbled into our sleeping bags and slept till noon next morning.

For some days conditions prevented another attempt. In the interim a trip down to the Base Camp was like a revelation to Houston and me. Our long stay on snow and ice made the sight of woods and green things marvelously soothing. I know I smelt every fern and flower on the way to the lake. Returning in mist and rain, we found the upper camp in clear weather and the men enjoying a banquet of plum cake.

On July 23rd a streak of fine weather set in which lasted till high climbing was over. We now began our packing to the higher camps, to Camp 4, an overnight stop. Then, next day, roped together and exercising great care, we worked our loads over two big snow-bridges and through the crevasses of "Klooch Corner." Beyond the cracks we assembled our hickory sledge, loaded it and pushed on to Camp 5.

Clear views of Crillon and the "Pointed Peak," as we called it, filled us with longing. An ideal day cheered us on, as we started at 4 A.M. from Camp 5 to finish our trek to the "South Col" with nine hundred pounds of food and equipment on the sledge. The beauty of that day with the exquisite blue of the Pacific framed between snow-peaks beyond glittering snowfields can never be forgotten. And best of all we handily reached our camp-site, pitched camp, and built a snow-wall to shelter the tents—all in good season. Over us towered the lower cliff of Crillon, while above, the summit peak, high and aloof, offered us cold challenge. Not a few of the jumble of peaks in view intrigued us, plainly offering delightfully difficult problems that climbers will be long in solving.

A day or two made us ready for our great attempt. Supplies had been moved to the cliff-foot to lighten loads on the first stage. On July 28th, after a breakfast of cornmeal-mush, our best working ration, we climbed the "South Col," skied to the foot of the

Photo B. Washburn

SUMMIT CONE OF MT. CRILLON FROM 12,300 FT. ON FINAL RIDGE

Photo B. Washburn

VIEW E. FROM FINAL RIDGE OF MT. CRILLON AT 11,500 FT.

Cliffs in rear drop 5000 ft. to Brady Glacier

Photo B. Washburn

POINTED PEAK (8,500 FT.) AND MT. DAGELET (9,650 FT.)
FROM NEAR CAMP 3

Photo B. Washburn

NORTH AND SOUTH CARPÉ
Two peaks named for the late Allen Carpé by the 1933 Expedition

ice-cliff, and followed the same route up the ice-cliff to the "Plateau." The four hours of climbing on the cliff was rendered much easier by the fixed ropes which we pulled out of deep soft snow. Cloud and wind were sweeping the plateau, but we had brought with us a small refuge tent and two days' supplies, meaning to lay siege to the mountain if conditions were not at once propitious.

Speedily we dug a hole with our axes about a foot deep in the side of a slope, surrounded it with a wall of ice-blocks, set up the tent, and crawled in to wait the weather's pleasure. We spent the morning trying to solve a mathematical problem—how best to fit six persons in a space 7 x 7 x 2 ft.

At 2 P.M. the weather cleared fairly well, and two ropes started, Washburn-Bates-Everett leading, Houston-Carter-myself following, cutting diagonally across three miles of plateau to strike the base of the "great final ridge" at its lower end. Thence we hoped to strike upward protected by the shoulder to the ridge crest, and over its succession of humps to the summit cone. We had worked part way over the great snow waste, willow-wanding as we went, when clouds completely enveloped us. After a time, no break occurring, we started on again in the mist till we fetched the bottom of the ridge. Already we had learned that distances were much greater than we had thought. Plugging upward through a maze of crevasses, we reached the top of the shoulder. The very remarkable direction-sense of our leader, Washburn, had brought us exactly to the point desired. Suddenly, a wind tore the clouds to shreds, and Dagelet and peaks to the southwest appeared before us—absolutely the most impressive mountain-panorama I have ever seen here or abroad.

For some time the walking had been exceedingly difficult, even twenty minutes to the hundred feet, the snow soft and powdery, letting one sink well above the knees. Each of us took turns in breaking a path, while momentary glimpses of the summit, as the wind grew in violence, showed it still a long way off. Despite our parkas, frost-bite threatened and rubbing was necessary, while wind-driven snow constantly obscured even the man next on the rope. There was nothing to do but turn back, though we had reached 11,500 ft. The peculiar snow conditions, and the vastness of the peak itself, will make its conquest a difficult problem. At 11.30 P.M., after seventeen hours of continuous

travel, we reached our shelter-tent, racked by sharp fatigue cramps in our legs.

After two hours, Washburn looked out to find the storm had blown away and at once decided that he, Bates, and Everett were in best shape to make another try. They left at 2 A.M. after a two-hour rest and at 4, sunrise, Houston, Carter, and I resolved to try for Dagelet, like Crillon till then unclimbed. We chose a diagonal course between two large crevasses which cut the upper slope, having a perfect climb over steep snow with minor difficulties enough to give variety. The climb was one of incomparable interest and scenic beauty—La Perouse bluish-ivory till touched by the sun, sheets of curious triangular ice-crystals, crevasses fringed at the lip by pendants exquisite in their sculpture.

We reached the top at 6 A.M. It consists of a huge cornice overhanging the western cliff fifteen feet. On this we stood, first firmly anchoring the rope to ice-axes in safe snow. Then Carter unfurled his shirt from a ski-pole which we left as a token of victory. Over the cloud-covered Pacific the great mountains cast their black shadows. On Crillon we could see our comrades, mere specks, toiling up the long ridge, and found later that they had seen us. The view of unnamed peak on peak, valley beyond valley, all touched with early morning light told us of the vastness of Alaska. After breakfast we explored the lower southwestern shoulder, and then made for the refuge tent, happy that we had conquered one of the virgin peaks we had admired so often. We hastily climbed down the ice-cliff, and skied back to camp at the foot of the "South Col."

After a sleep, we focused our eyes on Crillon, worried by the heat and the fact that the party had little water. At 11 P.M. I heard a voice calling "water, water," I waked Houston and Carter, and in another moment in came Washburn, Bates, and Everett, with sun-baked faces and thoroughly tired out.

Plodding all day long through heavy snow, hip-deep at times, they thought the top attained when they mounted a false summit on the cloud-veiled ridge. They were on the highest part of the ridge as far as they could tell, but the clouds soon lifted and revealed the true summit still five hundred feet vertically above them. Fatigue and the exceedingly dangerous state of the snow forbade much further progress. They had reached 12,390 ft. At this point the ridge is a knife edge with cornices overhanging

a 7,000-ft. cliff on one side, and a steep slope of soft snow—impossible to traverse—on the other. To go ahead would have been not to return. Bitterly disappointed, they returned to the ice-cliff, rolled the refuge tent down the cliff safely, and in the evening followed after it, but much more slowly. The journey back to Camp 5 below was a severe test of endurance for all of them.

The good weather was almost gone, our strength was for the time depleted, but we did have energy enough to climb another virgin summit, the 9,000-ft. "Pointed Peak," before descending, and to enjoy marvelous skiing. A last perfect day saw our equipment safely down to Camp 2, and another brought us to a wonderful banquet prepared in our honor at the base-camp. It included fudge, and an amazing shortcake made from the large, deliciously sweet wild-strawberries, big as one's thumbs, that fringe the beaches of southern Alaska.

Too much indeed of minor interest must remain untold—the huge steel-hard Sitka spruces, the salmon-berries, the salmon themselves running up the swift glacier streams to be chased and caught by hand, the absence of serious trouble from flies or mosquitoes, the vicious devils-club, the ptarmigan with flesh spiced by their diet of heath-berries, the great brown bears and flocks of mountain goats. Nor can many details of camp and climbing technique be told, the organization of the expedition, owing to the natural gifts and mature experience of our leader, Washburn, was masterly.

During our stay of twenty-seven days on snow and ice, the geologists of the party, Goldthwait with his two assistants, Dow and Platts, did a magnificent summer's work, determining the speed of the glaciers and pursuing other glacial studies. In addition, they made a most valuable collection of rocks and fossils.

Also, Washburn, after our descent, consummated this his third expedition to Alaska by completing a survey of Crillon Lake and its neighboring terrain.

It was with great regret, as the plane swept us up from Crillon Lake, that we saw the familiar landmarks speedily recede, and looked up at the noble bulk of Crillon—still unconquered.

Further Exploration and Ascents in the Coast Range of British Columbia

Henry S. Hall, Jr.

TRIPS toward the Mt. Waddington group from Tatla Lake in 1931 and 1932 and a near approach to Mt. Monarch in 1932 convinced me that I had found the best route to each of these outstanding uplifts of the Coast Range. Another season offered promise of actually coming to grips with the peaks if weather and the difficulties of the closer approach would allow. As it turned out we were singularly favored with fine weather in 1933, and if we had concentrated more completely on certain peaks upon which we set foot, than upon reconnaissance of the surrounding terrain, we should have had perhaps more than the one twelve-thousander to our credit and almost as much knowledge of the topography.

Hans Fuhrer who had been with me in 1932 was eager to return. Messrs. Donald W. Brown and Alfred E. Roovers of New York were enticed by stories of new worlds to conquer. These two preceded me to Vancouver and with Hans went into Garibaldi Park, still buried under many feet of snow after the late spring, where they climbed Mts. Garibaldi and Black Tusk. Arriving in Vancouver on June 23rd I put in a busy day purchasing supplies and the next morning encountered Mr. W. A. D. Munday on the street entirely by chance. We talked Coast Range, with the quite unforeseen but happy result, that he and Mrs. Munday, who were arranging to leave in a few days for Knight Inlet, decided at my suggestion to accompany us instead, and were ready to do so less than forty-eight hours later when we met on the dock for the Squamish boat. At Daisy Lake on the P. G. E., Brown, Roovers and Hans boarded the train and the united party arrived at Williams Lake next morning, June 27th, at an early hour.

Arrangements were soon made with T. J. Hodgson for a truck and by the middle forenoon the six of us, sitting on top of baggage and food boxes, were enjoying grandstand views in good weather as we rolled pleasantly along over the interior plateau towards Tatla Lake. At Alexis Creek a stop was made at the

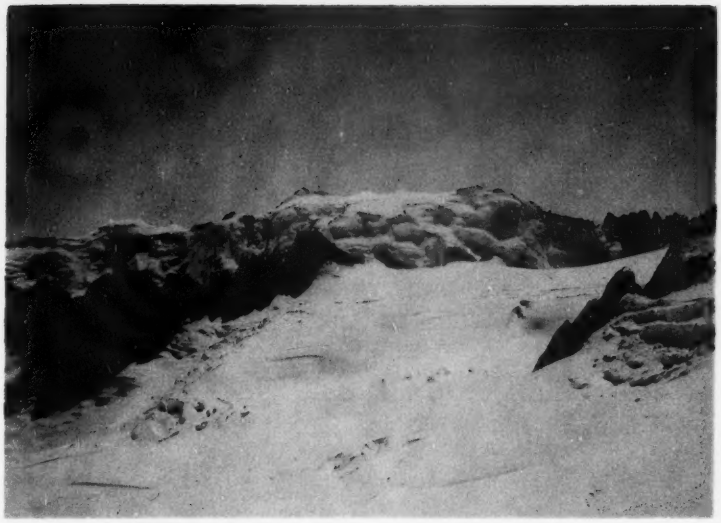


Photo Henry S. Hall, Jr.

MT. MUNDAY FROM COL AT HEAD OF CATARACT GLACIER

Photo Henry S. Hall, Jr.

HEAD OF CATARACT GLACIER

Photo Henry S. Hall, Jr.

MT. TIEDEMANN AND NORTH BASIN FROM SCIMITAR GLACIER

Photo Henry S. Hall, Jr.

MT. GEDDES FROM SCIMITAR GLACIER

Tom Lee's for tea which increased to supper proportions, and again before dark we halted on the highest point of the road, east of Tatla Lake, from whence it is thought that Mt. Waddington is visible. As before, in the six times when I have passed this spot, clouds obscured the view down the Homathko, but more to the west in startling relief appeared Mt. Monarch absolutely clear in the golden sunset sky. After dark, and in the dark, the truck's light having failed, we reached Graham's where Pete McCormick was on hand to greet us. Mrs. Graham soon had us arranged for the night, and in the morning the truck carried us on to the end of the branch road just short of Bluff Lake at the head of the Homathko. Pete with H. T. Valeau and Pete Evjen, whom we later called Ed to avoid confusion, soon joined us with the pack train. After a couple of hours to pack the horses we got under way, but went only to Valeau's place at the west end of the lake before camping, to allow time for opening food boxes, repacking and adjusting of packs. Half of the food was left at Valeau's cabin and the remainder packed to stand the rough trail which we knew from last year lay beyond Middle Lake.

At 11.15 A.M. on the 29th we were on the trail, nine people riding, with eight pack horses. It was a fine day and at the east end of Middle Lake the Waddington group came out superbly, towering ten thousand feet above us. Waddington itself rose just to the right of Tiedemann, the whole mass glistening white in a brilliant blue sky. That night was spent a mile short of Twist Lake.

Waves broke over the horses' heads as we entered the long lake ford the next morning but packs had luckily been put on high. After a stop for drying out and lunch at Granite Creek, we went through the arduous six miles to the farther side of Crazy Creek in the afternoon, almost losing one pack horse in the river, and camped a few hundred yards nearer its confluence with the Homathko than last year. We had saved a whole day from Bluff Lake. With some misgivings, the Homathko was forded the next morning, July 1st, and, after a short day, camp made in the rain just below a sharp U-bend of the here deep and sluggish Homathko, directly opposite Scimitar Creek Valley.

With convenient dead timber nearby a good raft was constructed in the morning. Roovers, Hans and I crossed on the

first trip and pushed rapidly over the jack pine flats to Scimitar Creek canyon. Passing through fairly heavy timber above the canyon and along the north side of the creek, by mid-afternoon we came out on a gravel flat from where over the trees up the valley loomed the gray massive snout of Scimitar glacier, which Hans and I had seen from 5,000 ft. directly above the year before. The next day was consumed in rafting everything across the Homathko and establishing camp in a fine cedar grove just at the mouth of Scimitar Canyon. This picturesque and comfortable camp was occupied for several days while all hands engaged in cutting out a horse trail and moving us up to Base, or as we called it Glacier Tongue Camp, a few hundred yards below Scimitar glacier on the right (south) side of the creek. Fording was difficult and dangerous, even for the horses, but could be avoided until just near base camp. We later found a route over the glacier snout for back-packers. The temperature of the creek was 32°, the same as the surface water on the glacier, as it issued from the ice-front, and only 34° near the lower camp at the mouth of the mile long canyon, six miles below the ice. We did bathe, but not for long or often.

On July 8th, a perfect day, we commenced the second stage of operations. From base camp, 3,300 ft., Hans and Roovers climbed to 7,500 ft. on the steep slopes back of camp and came back with a goat. Mr. and Mrs. Munday and I walked up Scimitar glacier four miles, crossed to the north side and entered a curious valley, blocked at its lower end by the main glacier flowing across it, and filled at its upper end, only a mile and a half away, by another large glacier which seemed to curve out at right angles from a valley parallel to the Scimitar. I called this odd place "Pocket Valley." It played an important part in our later movements.

On the 9th, while Valeau, Pete and Ed made a round trip to Canyon camp for more food, we worked out a possible horse route up the lower portion of Scimitar glacier. A day of light rain followed, spent in camp.

With the horses lightly packed and carrying some weight ourselves we essayed the slanting glacier front on the morning of the 11th. On foot we could just manage the steep ice surface with packs, on our side of the valley. The horses after crossing a branch of the creek were led up the only gently sloping passage

on the ice front, with considerable difficulty. The climax came where I, working down from above to meet them, had cut broad steps on an ice ridge between a crevasse and the surface slope. Nigger, a good pack horse but one whose independent ideas had already been annoying to us and almost fatal to him, chose to walk at the side of, but not in, my steps. At the narrowest place he slipped. By a miracle he was stopped thirty feet below by an ice pinnacle. To unpack him, get him onto his feet, and back up to and over the difficult bit was not easy, but by eleven o'clock we were ready to move up the glacier, three horses and seven people. Valeau and Ed had started the return trip to Bluff Lake to bring in the remainder of the supplies.

Three miles up the glacier lies the first of the remarkable slide moraines. At the same place one first sees the magnificent Tiedemann group to the left, a semicircle of granite spires, surrounding a glacier basin from which pours a broad, radiant icefall. Mt. Hickson from this side rises almost vertically over 5,000 ft. above the east side of the glacier as a stalwart sentinel to the highest mass of the Coast Range. Leaving the others to take the horses off the glacier and into Pocket Valley, Mrs. Munday and I went on several miles to the base of Mt. Hickson, just past the upper and largest moraine and opposite the twin icefalls which come down more than 5,000 ft. between Mts. Tiedemann, Combatant and Hickson. We were very pleasantly surprised to find the whole route easy for horses. The others had not without difficulty gotten the horses off the ice and over the steep hundred-foot moraine into the flat valley floor, and were making camp when we returned. Here was an ideal spot: a strategic campsite; a natural corral for the horses with plenty of feed and water for an indefinite period and no chance for them to escape.

July 12th, after an uneventful march up the ice, saw us established in climbing camp, altitude 6,000 ft., on winter snow behind a moraine at the base of Mt. Hickson, eleven miles up Scimitar glacier from base camp. From the tents we had an impressive view. Two miles away to the south lay Fury Gap, 3,500 ft. above us, where the Mundays had camped in 1928 for their assault on Mt. Waddington. To the left of the gap the whole mountain draped by a succession of ice-cliffs with its snow summit visible, rising over 13,000 ft. above the sea, made us realize that we had

at last reached the heart of the range. Back of us towered Mt. Hickson. Across the Scimitar, rose very steeply a series of sharp peaks from the snow-covered Mt. Spencer past Mt. Geddes, to the peaks beyond Pocket Valley on the north. The Mundays readily agreed that as superb mountain scenery the area immediately north of Mt. Waddington exceeds in beauty anything they had previously seen in the Coast Range. Both the extremely heavy glaciation and the bold granite and gneissic-schist rock structure, as well as the extremes of relief, often ranging from 6,000-10,000 ft. from valley floor or glacier to surrounding peaks, contribute to this grandeur.

To solve the intricacies of Mt. Waddington was, of course, our first objective. Under a cloudless sky we all took part in a leisurely scramble above camp on the 13th. At about 7,600 ft. we stopped and sat on smooth ice-worn granite slabs to gaze at Waddington and the dazzling icefall which pours out from the Waddington-Combatant col to form the head of Scimitar glacier. We saw what appeared to be a quite easy route to the left of the icefall up to the col. An apparently possible route from the col by a glacier passage to connect with the Munday's 1928 route to the northwest summit of Waddington also encouraged us. Returning to camp by mid-afternoon we decided to strike early the next morning for either Tiedemann, Combatant or Hickson, whichever seemed most likely of access.

A cool, clear moonlight greeted our early rising on July 14th. At 2.30 the six of us set out. By the time we had reached the small glacier on the south side of Mt. Hickson, Brown who had not been feeling well for several days decided to return to camp. Roping here we made steady progress around the base of Hickson. From 8,200 ft. on the Hickson-Combatant col at six o'clock, in the first direct rays of the morning sun, we dropped several hundred feet, but were soon climbing steeply again to the main, broad Waddington-Combatant col reached at 7.45, altitude about 9,850 ft. On the hard snow surface we walked eastward through the broad col between the sheer sides of Waddington and Combatant and in half an hour came to a vertical drop of several thousand feet below which the Mundays at once recognized Tiedemann glacier, sweeping down fifteen or more miles toward the Homathko Forks. A brief glance sufficed to show that with the

Photo Henry S. Hall, Jr.

MT. WADDINGTON FROM SUMMIT OF MT. COMBATANT

Photo Henry S. Hall, Jr.

CAMP AT HEAD OF SCIMITAR GLACIER

Snow summits of Mt. Waddington just visible to left

Photo Henry S. Hall, Jr.

MT. MUNDAY AND SPEARMAN PEAK FROM MT. COMBATANT

Photo Henry S. Hall, Jr.

TIEDEMANN GLACIER FROM MT. COMBATANT

exception of the previously seen glacier corridor just west of, but connecting with the col, and overhung by towering ice cliffs, there was no other possible approach to Mt. Waddington from this side. And just as certainly was Tiedemann cut off from the col by the sides of Combatant which rose almost straight some 6,000-8,000 ft. from the head of Tiedemann glacier. Combatant itself looked forbidding but possible, and with the knowledge that it would be our best viewpoint next to Waddington and Tiedemann we soon chose it for the day's goal.

The climb cost us ten hours of slow, steady, hard work, sometimes up long, narrow ice couloirs partly snow-filled, then up rock only moderately difficult but with occasional nasty short pitches. The rock was granite and generally sound. Once or twice Hans leading was all but stopped, and was not very optimistic about completing the climb. We could not even be sure that we were headed for the actual summit. While standing in the shade of a narrow couloir one sometimes became a bit numb with the cold downdraft wind. The two most awkward places were perhaps 1,000 ft. and 500 ft. below the top. In the lower, the only way out of the head of a long couloir was by a narrow outward sloping ledge, to the right, which everyone negotiated as best he could, the others on the rope anchoring but unable to be of much assistance. The higher spot consisted of a short rock chimney, a few feet of "rateau de chevre" at the top, a traverse to the right, and lastly through a short overhang by a partly snow-filled crack just wider than the "monolith crack" in Wales. By four in the afternoon we had to decide between turning back or the probability of a night on the mountain. The weather continued perfect, the party all felt fit, and we decided on the latter alternative, as it was obvious that if we turned back this time we could never expect more favorable conditions.

At 7.15, after taking ten hours to climb 2,500 ft., we came out onto the summit. The air was perfectly clear in every direction, except for a very slight haze to the east. A few degrees of horizon was obstructed by the only two higher peaks in the Coast Range, Waddington and Tiedemann. Both Munday's aneroid and mine showed about 12,400 ft. The great detached summit tower of Waddington, which we had seen all day, looked more nearly impossible than ever. The most likely approach to it is over

the snow summit. The tower itself is about four hundred feet high, practically vertical on every side, and the hard smooth rock is generally crusted with ice. Tiedemann, about 12,800 ft., could have been climbed by dropping down 1,500 ft. to the intervening col, and climbing the northeast snow ridge to the summit.

As the sun drew close to the horizon we were absorbed in the view. To the west, at the right of Waddington and fifty to one hundred miles away, were the glistening Klinaklini snowfields with wave upon wave of snow summits dominated by one perhaps over 11,000 ft. which the Mundays had an earlier year called Silver Throne. Mts. Bell, nearly 12,000 ft., and Geddes, nearby, attracted the eye, while to the northwest, fifty miles away, Monarch towered alone, the most conspicuous, isolated peak in the whole range. Somewhat to the left of and behind it, peaks which must have been further than Bella Coola stood out perfectly clearly. To the northeast Middle Lake, Tatla Lake and beyond, the interior plateau, were slightly obscured by smoke. To the southeast beyond the Homathko and Southgate rivers the air was very clear and we easily recognized various peaks named and unnamed up to distances of at least 125 miles. The water in Bute Inlet and the peaks which Munday knew well there were identified. Across the water of the Straits of Georgia, clearly visible, were the highest peaks of Vancouver Island, 140 miles away. Nearer at hand lay the full length of the Tiedemann glacier, and directly at our feet, looking very far below, the sweeping curve of Scimitar glacier.

After the sun had set to the left of Monarch, the golden glow faded slowly and while Hans made cocoa on a little alcohol heater a ledge just below the summit was cleared. Huddled very tight, with a secured rope passed in front of us in case anyone slipped, we settled down for the night. Soon the moon rose and shone full on Waddington. Even the avalanches were mostly stilled this night, although it was not cold, 22° F. the minimum, and there was little or no wind. All of us dozed and shivered alternately. Toward morning we grew rather stiff, but there was no real discomfort. One large avalanche roared down, sweeping across the entire corridor which we had thought of as a route to Waddington at 4.30, the hour generally safest from such occurrences. The light in the north, faintly visible all night, began to increase by 3 A.M.

and before the sun rose to the left of Tiedemann we got up and did limbering exercises on the rather restricted summit while enjoying the view in its morning aspects, with totally different effects of light and shadow from the previous evening.

Starting down at 6, for half an hour we followed the narrow west ridge thinking that we might descend to the right and try the Tiedemann-Combatant icefall lower down. This would have involved considerable uncertainty, so when on our left a long couloir appeared, Hans thought it might be one we had seen from below the morning before running the whole height of the south face. This proved correct and we were soon started on a four-hour descent, without difficulty, the upper half being sufficiently steep to necessitate facing in, with occasional step cutting, and at 10.30 we halted to eat and rest on rocks just above the main col.

Below the col the sun's heat grew more intense, until we reached the base of Mt. Hickson, where it was uncomfortably hot on the snow, and the short tongue descent of the glacier, still snow covered, was actually slushy. Unroping, some of us rested again and others ran and glissaded down to camp, the last one getting in about 3 o'clock.

The rest of the day was not without its amusing incidents as the winter snow on which camp was pitched had melted, both on the surface and underneath where it rested on the rocks. One would hear sudden exclamations about camp as something or someone subsided or even disappeared altogether. The largest cave-in occurred under the cook tent and the rescue of cook and supplies provided much merriment. The snow surface had already in four hot days fallen more than a foot around the tents, which led to the classic but inevitable incident of someone rolling right out of bed, under the tent wall, into the open, during the night.

The following day of rest was devoted to moving camp from its unstable position on the snow to rough gravel slopes nearby, which involved levelling tent sites at considerable labor. Clouds poured over Fury Gap the next morning and at mid-day Pete came up from base camp with additional provisions, returning in the afternoon; a twenty-two-mile walk up and down the glacier. Rain began in the evening. The wind, coming at first in gentle gusts, increased in force until during lulls it could be heard roaring down from above for the next onslaught. The tents, held

down by rocks, began to snap and strain at their moorings. Sometime in the early morning in a heavy rain the Mundays, to save their tent, already torn, from complete destruction, took it down and retreated to the cook tent, there joining Hans. By six the cook tent too began to go and there was already some water inside Roovers' heavy floor tent which Brown and I were also sharing. The rain at about this time abated but the cook tent weakened by the night's buffeting soon developed a six-foot rent. A temporary retreat was decided upon, and shortly after a hurried breakfast we were packed with about sixty pounds apiece, and on our way to base camp. Valeau and Ed came up from Canyon camp with packs at dusk.

After a day to dry out and repair tents and equipment we put in a good day on the 20th by climbing 6,000 ft. out of the south side of the valley to cross the col at the head of Cataract glacier. From there we gained a good view of the back side of the peaks ranging eastward from Mt. Tiedemann and down the Tellott glacier, east of and parallel to Tiedemann glacier. This was a most satisfactory vantage point from which to sweep all the country between Mt. Munday on the south to beyond the Homathko on the east: full of countless peaks, snowfields, glaciers and valleys, few known and still fewer named.

On the 21st we returned advance camp to Pocket Valley. The next five days were spent in climbing and exploring the country back of Pocket Valley and its large glacier. On the 22nd we split in three parties, I going up Pocket glacier five miles, the Mundays going back across the Scimitar and up the east side of Radiant glacier which flows out of the basin surrounded by the granite spires of the Tiedemann group, and the others, Brown, Roovers and Hans also going above the crest of Radiant icefall, the result of a misunderstanding, as it had been intended that they should reconnoitre Chaos icefall as an approach to Mt. Tiedemann.

At supper time an enormous grizzly came unpleasantly close. Roovers first saw him and as we all stood up the bear did likewise. Our numbers caused him to beat a dignified retreat in stages until at a yodel from Hans he turned and fled. At each bound on the gravel bar a puff of dust arose which gave the appearance, as someone suggested, of an animated cartoon. His fourteen-inch tracks were later paced as seventy-five yards from where we had been sitting when we first saw him. We saw numerous bears

before and after this, including three grizzlies together later in the summer, but with the exception of a small black bear which almost walked into the tent with Pete none quite so close.

The Mundays, Hans and I started for Mt. Geddes at 3 A.M. on the 23rd. After a few miles up the Scimitar glacier we turned to the right up what Munday called Dissension glacier, flowing down to the Scimitar out of the snowfields to the east of Geddes which also feed Pocket Valley glacier. After 2,000 ft. we were forced into the icefall near its top. An hour of rather sensational and dangerous work among the seracs, during which we undoubtedly took some chances, brought us out into the upper basin which was crossed in two hours to the bergschrund at the foot of Geddes. Hans made two false starts in attempting to negotiate this, once trying to cut a hole through the upper lip, but a rickety slanting snow-bridge finally served, and by noon the rocks were gained. A variety of climbing to the left for the first hour down a rather trying couloir and traverse, then more to the right up flattish couloirs and rock pitches, the upper section partly on snow-covered slabs, brought us to an absolute impasse under vertical cliffs at 5 P.M., altitude just over 10,000 ft. and probably less than 1,000 ft. below the summit. We could have tried the west ridge which had looked possible from Combatant, but this did not seem to offer much hope of anything but another night out and so we retreated, floundering miserably down couloirs filled with rotten snow and thence by easier rocks back around to the bergschrund at sunset. Two hours down over the snowfields brought up by the route I had seen the day before to Pocket glacier. The last five miles down the glacier was done by lantern light, and after two more miles over moraine, by the rocky sides of a glacial stream, and along the valley floor we reached the camp at midnight. Pete was up to give us soup, bannock and tea. Brown and Roovers had failed on a peak, seen up Pocket Valley from camp, which the latter named Mt. Cornelia.

After a day of rest a leisurely trip was made up to the ridge separating Pocket Glacier from a tributary of the Klinaklini for topographical information.

Mrs. Munday, Brown, Hans and I made a rapid trip up Pocket Glacier to the north side of Geddes on the 26th, finding that whole face sheer and thickly ice veneered. Across a very deep glacier-filled valley which drained after ten or twelve miles into the

Klinaklini, rose Mt. Bell, glacier clad from summit to valley and probably the most inaccessible peak in the district. Munday and Roovers went to the pass leading northward from Pocket Valley to look at a long wooded valley draining northeastward which we had seen from Combatant. They reported that horses could easily cross the glacier pass, and if this valley is travelable it may offer an alternative to the Homathko route into the Waddington area.

Snow fell that night and on the 27th we returned to Glacier Tongue camp. Five more days, the first to Canyon camp, the second to River Ford camp, the third to a point four miles east of Twist Lake, the fourth to Valeau's place at Bluff Lake, and the fifth to Graham's at Tatla Lake, brought us out.

After two nights at Graham's the Mundays left for home, and Brown, Roovers, Hans and I with Pete and Ed started for Mt. Monarch.

Roovers, after waiting for the mail at Graham's, attempted to follow us by the road to Pete's cabin where we were to spend the first night. Due to an understanding from Pete to give the horse his head if in doubt about the route, he did so at a road fork, with the eventual result that he spent the night under a jack-pine, rode many miles north the next morning, turned about and luckily reached the cabin by 10 A.M. He had been without food for twenty-four hours and had covered by conservative estimate forty-five miles, and it had rained very hard on him and us the afternoon before. The fishermen failed to prove their worth on Fishtrap Lake that morning. I walked to triangulation station "SAND" for a view in the afternoon, and could see Perkins Peak, Whitesaddle, Blackhorn and Razorback as well as some miles down the Klinaklini Valley. After supper Sam, an Indian who had trapped at Knot Lake, came around at Pete's request and agreed to accompany us.

On August 5th we rode over the rolling jack-pine country to George Powers' place at the south end of Kappan Lake in seven hours. The next day we covered in a little over nine hours the whole distance to our last year's Monarch view camp. Sam led, the day after, as we took the horses down his steep trail to Knot Lake, forded the narrows and made camp on the shore of the south side of the large alluvial fan on the west side of the lake. This was a lovely spot, only 2,000 ft. above the sea in a deep

Photo Henry S. Hall, Jr.

VIEW N. E. FROM MT. COMBATANT

Mt. Monarch on left skyline, fifty miles distant

Photo Henry S. Hall, Jr.

MTS. BELL (LEFT) AND GEDDES (RIGHT) FROM MT. COMBATANT

Photo Henry S. Hall, Jr.

MT. GEDDES

Photo Henry S. Hall, Jr.

MTS. TIEDEMANN, COMBATANT AND WADDINGTON

From five miles E. of Mt. Geddes above Parallel Glacier

trench valley with high mountains towering 7,000 ft. above the lake at its south end.

No time was lost while here. The first day, August 8th, we reconnoitred North Creek Valley, whose stream had built the delta we were camped on, and which rises near the northern spur of Monarch and very near the low divide separating its valley from the side of the large glacier at the head of the Talchako. The going was unpleasant nearly all the way, over very coarse rock slides. Three grizzlies at 125 yards were photographed on the way up and although fleeing from Hans' yodel at the time, they were in the same place on our return eating berries. We learned nothing this day except that other routes to Monarch seemed more hopeful.

The whole of the 9th was spent, Sam and Ed helping us, in back-packing a bivouac for four days to timberline, here 5,500 ft., from which I thought we had better next try to reach Monarch. As we ate supper we gazed at the Waddington group fifty miles away, visible down the North Fork of the Klinaklini, the outlet of Knot Lake. Mosquitoes, the first of the summer except for a few at Monarch view camp, appeared when the breeze dropped. All our previous camps had been lower except the one at the head of Scimitar glacier, miles from any vegetation.

By starlight the morning following we left the bivouac at 3 A.M. for Monarch. Mounting a few hundred feet at first we were delighted to find excellent going for miles toward the mountain over rolling grassland, snow and easy rock fields. By 6 we had reached a glacier-filled valley at the head of which, perhaps five miles away, stood Monarch, rather austere in the morning sun. Slabbing the steep side walls, at a level, we were on the ice before 8. Here Roovers, who did not seem to have recovered fully from his night out, turned back. The three of us after roping continued up the easy névé for two more hours, a rather steep pitch bringing us onto a ridge, about 9,500 ft., separating Monarch from a lower peak to the south which we called Queen. Monarch now towered directly 2,200 ft. above us. The only route was guarded by a small hanging glacier bulging on top of the slightly convex-angled face.

After resting for an hour we decided to go around to the west side of the mountain as the southwest ridge looked distinctly feasible and safer. A heart-breaking descent of 2,000 ft., over

snow and rock slide, followed by a few hundred feet of ascent, brought us in four hours to the base of the ridge at 3 P.M. It appeared steep in parts and long, 4,000 ft. to the summit. The weather was perfect and looked as if it would remain so, which it subsequently did for a week. The ascent would involve a night up on the mountain somewhere near the top. We discussed the matter rather warmly for some time and finally turned our backs on the mountain and started down.

Hans and Brown then had an idea that we could avoid climbing over the high ridge by going down a short glacier to the large valley which we knew drained into the north fork of the Klinaklini just below Knot Lake. We tried it with the net result that after dropping down some 2,500 ft. to tree line, the going below looked so bad, that the others were glad to accept my rather reluctant suggestion that we retrace our steps and climb back 4,000 ft. over the ridge, and thence home by the morning's route. This we laboriously did, and returned to camp after having been out twenty-five hours, covering some twenty-five to thirty miles and climbing about 9,000 ft.

No sooner had we lain down to rest than the mosquitoes came out in swarms. With nothing but a tent fly and sleeping bags we were at their mercy and soon abandoned the unequal contest. Packing up we dropped quickly down, slipping and sliding through a bush-filled gully to the lake, and back to camp.

Before leaving I wanted to examine the north end of the lake to determine whether the story of an outlet at that end was true. While we rested in the afternoon Ed built a raft, bound together with pack-ropes. On this craft, with a mast and a pack cover as a sail in case of favorable wind, Hans, Ed, Sam and I set sail the next morning. After being towed by two horses, ridden by Sam and Ed, through the narrows, we poled and paddled, sailing for half an hour, in six hours, the seven miles up the lake. Here we learned that there is no drainage north, but that a stream coming off the plateau to the east does pass within half a mile of the end of the lake and then flows north into the Atnarko. A large bull moose, which Sam had shot at and missed, came crashing out into the open, turned back, ran for a few minutes through the woods, entered the lake, swam across it for a distance of nearly a mile and disappeared on the other shore. We returned to camp the next day, and the day after started for Stuie.

Four days found us with thirty-eight miles still to go, and as a change from riding I set out on foot, reaching Stuie in thirteen hours, and the outfit arrived the second day about noon.

With five days left before the next steamer from Bella Coola for Vancouver, we could make a short trip, and one of the owners of Stuie Lodge, Mr. T. A. Walker, kindly volunteered to take us up to his cabin on Cariboo Mountain, whence he said we could get, in one day and back, to a splendid viewpoint for Monarch and the range west of the Talchako.

Though Stuie is forty miles up the Bella Coola Valley it is only six hundred ft. above the sea. The cabin is at 4,500 ft. and is reached by a trail built by Walker with the aid of some Vancouver schoolboys. Pete and I had used it to get out of the valley when starting on our attempt to reach Monarch from Stuie in 1932. This time we went up to the cabin, spent the night, and the next day walked some miles south above the east side of Talchako Valley, finally walking up easy rock and grass slopes to the highest point for some miles, 7,700 ft. The air was perfectly clear and I secured a complete panoramic photograph from the top. To the east I could see part of the route which Pete and I had taken in 1932. To the south, back of a large glacier which fills the upper end of the valley, perhaps twenty miles away, stood Monarch absolutely alone in its glory. The valley, here less than 1,000 ft. above the sea, is bordered on the west by peaks up to 10,000 ft. Many of these peaks are jagged rock summits and some are glacier covered. Short steep side valleys come out of the range into the main valley. Beyond a few of these this whole area is wild and probably very little if at all known. At the corner of the Talchako and Bella Coola valleys rises Mackenzie's "Stupendous Mountain." Just to the right but north of the valley and farther away is Thunder Mountain. Directly north are the Rainbow Mountains with their colored rocks.

All things must come to an end, and so did our trip as we started down from this fascinating view. Two evenings later just at sunset we drove down the valley toward Bella Coola past peaks rising 6,000-8,000 ft. directly out of the valley. That is a great country and offers rich rewards to the mountaineer, who will take some hard work and disappointments along with the rest, as he goes out for virgin conquests.

An American Tyrol

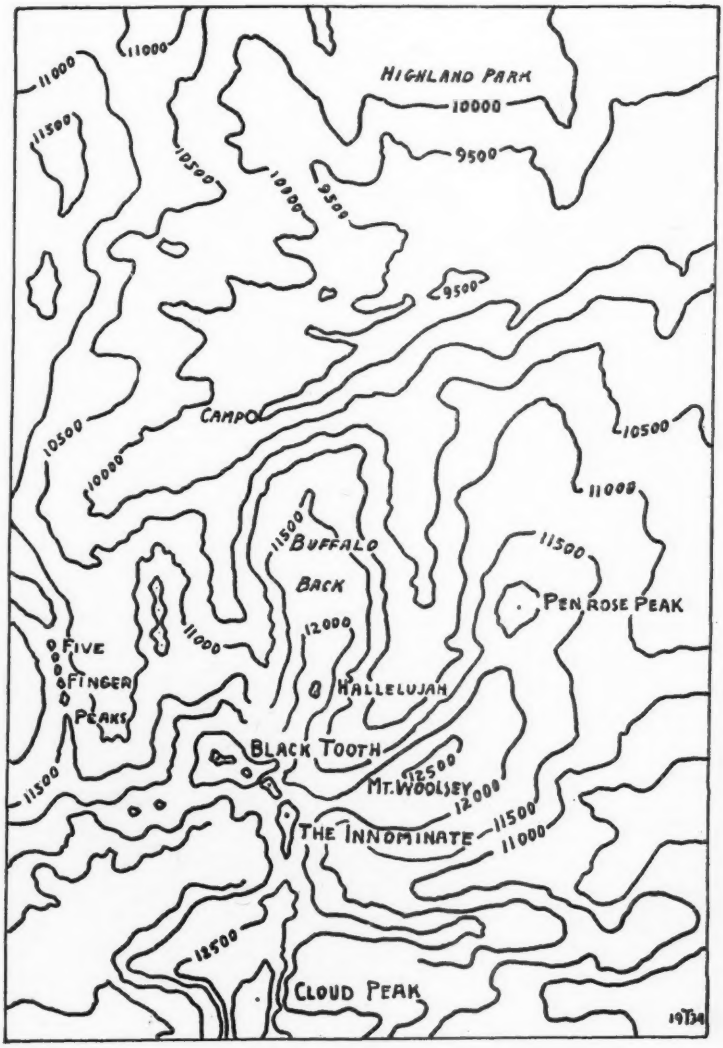
Climbs in the Big Horns, 1933

W. B. Willcox

MOUNTAINEERS seem to have overlooked the Big Horns. The region has long been a roaming ground for geologists, and for the dude-ranchers of northern Wyoming; but hitherto it has rarely been visited by climbers. I had never heard of the range until last autumn, and none of our party, when the climbing began, had more than a general idea of what we should find. The mountain which was our goal was the only one we had heard of; its neighbors were a complete surprise, and turned out to be even more exciting. None of us had done any extensive climbing in the Rockies, and we were therefore unable to compare the region with others in the West. But by comparison with the Alps, it certainly deserves the title we have given it.

The range from the south is singularly unimpressive. The gentle curves are reminiscent of the Pyrenees, and do not promise good climbing. But the northern end changes abruptly: North of Cloud Peak, within the radius of a few miles, is a group of needles whose jagged outlines would do credit to Chamonix. The northernmost and highest of this group is Black Tooth (13,024 ft.); it is also the only peak north of Cloud which boasts a name of its own. The honor is deserved, for from a distance it is by far the most impressive in the range. As seen from the north, it dominates the foothills by virtue of its mass and outline. Two long flanking ridges, with glacier and cliffs between them, culminate in a tower of strikingly darker rock. All in all, a most respectable mountain.

This was our objective. It was reported—to someone by someone from someone else—to be the highest unclimbed mountain in the United States, but we were unable to confirm either part of this rumor. While attempts had certainly been made upon it, there was no record of success. There were stories of a cowboy here, a dude-rancher there; no one knew for certain, and no one could provide us with details. Current opinion, wherever we inquired, was certainly that Black Tooth remained virgin.



MAP OF THE NORTHERN BIG HORNS
Scale two miles to one inch.

There seemed to be nothing to do but complete our preparations, discover a route, and hope not to find prune pits on the summit.

We did know that certain attempts had failed.[1] The most recent one had been in 1932, when T. H. Rawles, L. O'Brien, and W. Jenks had tried several times to reach the top. They had been defeated more by lack of time and breath than by difficult climbing, and Rawles had returned to New Haven with the hope of trying again. His enthusiasm and his photographs had persuaded Miss E. D. Woolsey and myself that the Big Horns were indicated for the summer of 1933. O'Brien and Jenks unfortunately could not join us, but my brother and sister did. The five of us intended to establish a camp with supplies for two weeks, so that we could besiege the mountain more seriously than the earlier party had had time to do.

The northern Big Horns have the sovereign virtue of accessibility. Sheridan is less than twenty-four hours from New York by airplane, and two nights and a day by air and rail. From Sheridan we were driven to Tepee Lodge, a dude ranch in the foothills some twenty-five miles north of Black Tooth. It is at an altitude of 7,200 ft., and both horizontally and vertically is the nearest climbing base. The owner, Allen Fordyce, did everything in his power to make our expedition a success. We found to our surprise that a dude ranch can be as delightful and as satisfactory a base as any in the Alps.

We established camp at an altitude of about 9,500 ft., some four miles to the north of Black Tooth. It was an ideal site, with a stream and forest behind us and a meadow and lake in front; on our right the final shoulder of Black Tooth fell in smooth cliffs to the water. There was pasturage enough for a half-dozen horses, and beauty enough for a hundred climbers. The sun rose in the sharp notch at the lower end of the lake, and in the evenings, long after sunset, there was still an alpenglow on the ridge above us.

As soon as we were established,[2] we set out to determine the nature of our problem. From our camp a long hump leads south-

[1] The attempts of which I have been able to find record are the following: Those of Mrs. E. G. Adams, Dr. Alexander Forbes, Messrs. C. B. Newhall and N. L. Goodrich in 1928; that of Dr. Forbes and Mr. Newhall in 1930; and that of Messrs. Rawles, O'Brien and Jenks in 1932.

[2] A word about equipment: Provisions were of the usual sort, dried and tinned, but augmented by trout from the lakes. Our one disappointment

Photo W. Gorrell, Jr.

BLACK TOOTH FROM THE NORTH

PANORAMA OF THE RANGE FROM THE EAST. FROM LEFT TO RIGHT:
THE INNOMINATE, MOUNT WOOLSEY, BLACK TOOTH,
HALLELUJAH, BUFFALO BACK

Photo W. Gorrell, Jr.

HALLELUJAH FROM THE WEST

THE INNOMINATE, WITH THE GARGOYLE PINNACLE
IN THE NOTCH ON THE RIGHT

ward to a sharp rock spire, and from this begins the northeast ridge of Black Tooth. The hump became christened Buffalo Back, and provided our first tedious training walk. I cherished hopes of completing the day with an ascent of the spire; at least we could determine whether there were a route around it, from Buffalo Back onto the northeast ridge. We didn't, and there wasn't. The end of Buffalo Back is at least five hundred feet from the spire—some one hundred horizontally and four hundred vertically. The gap looked impossible to cross, but there was little incentive to try: The sides of the spire seemed steeper and smoother than any mountain has a right to be; the only conceivable access would be on the farther side, from the northeast ridge. We christened the spire Hallelujah,[3] as an expression of our feelings, and went home greatly sobered by the first day's reconnoitering.

Since Buffalo Back led nowhere, there remained the west ridge. This was the route followed by Rawles, O'Brien and Jenks in 1932. They had reached the ridge from the northwest, and had climbed it to the foot of the final tower, at a point where a wide ledge connects the tops of the two flanking ridges. Rawles assured us that they had encountered only very moderate climbing. But the route was long, and a large party could consume a great deal of time on it. There would be an obvious saving of distance in forcing a way directly up the north face to the ledge. Whether there would also be a saving of time, only experiment could prove.

On June 30th Miss Woolsey, Rawles and I started on our first major reconnaissance. We reached a point some half way up

---

was dried soy beans; the altitude went to their heads, and after forty-eight hours of boiling they still tasted like unripe bullets. We used tepee tents, which can be bought in Sheridan for little more than the cost of expressing. Sleeping-bags, even in June, should be only of moderate weight. Rope and boots are necessary or advisable for all the climbing, and sneakers are a great help for much of it. We found ice-axes useful on the interminable boulder-fields, and more so on the frequent glissades; one axe to a rope would be a scanty minimum. Dark glasses are not needed, although they are sometimes a comfort. Crampons and gloves we took but never used. Heavy clothing is unnecessary on the mountains, for the temperature is ideal.

[3] All these peaks are officially nameless, and have no local names which we could discover. We were, therefore, compelled to give them names of our own, and these—for lack of others—I shall use in describing them. The only personal name, and the only one which we are anxious to have retained, is Mount Woolsey. It was christened in honor of Miss Woolsey's father, whose tragic death occurred just before we climbed it.

the face, and were surprised to discover a cairn. In it was a message, signed W. Gorrell, saying that the writer had reached a point some two hundred feet higher in September of 1932, and had turned back because of wet and dangerous rock. We were impressed by the effort, but not by the route. The face did not improve with closer acquaintance, and the line of cliff between the ridges looked anything but friendly. It might go. But we were not out to discover difficulties, and there seemed no question that it would take longer than Rawles' old route.

A narrow couloir was visible on our left, between the northeast range and the cliffs of the face. That couloir seemed the only alternative to the circuitous west ridge, and worth investigation. Miss Woolsey and I therefore started out across the top of the great snow slope, leaving Rawles to bask on a rock. The traverse was easy but exhilarating; the steep, soft snow was enlivened by occasional bits of ice, and by one rock tongue which provided a few feet of delicate climbing, one foot on rock and one on ice. For the first time I felt that I was on a mountain which could hold up its head in the most fastidious Alpine society (although, as my brother pointed out, it might feel a trifle scantily clad).

The couloir proved to be steep but easy, and brought us out at the corner of the north and east faces. We were *behind* the cliffs of the north face, which here form a buttress parallel to the northeast ridge, and enclosing an odd little pocket invisible from below. Above us more easy snow led to the eastern end of the great ledge. We found ourselves on the north face again, under the final tower. It would go; somehow, somewhere, it would go. We had all we could do to keep from trying it. But the others were still in camp, and it was already four-thirty; honor and prudence both urged a retreat. We glissaded down to the couloir, down the snow to the scree, and seemingly most of the rest of the way down to a late dinner. We had done enough to make an exciting day, and we had the solution to the problem.

The actual climb, three days later, began with an expeditious retracing of our route to the ledge. By eleven we were lunching on it, and looking nervously at the few hundred feet above us. It would almost obviously go, but...? Rawles soon started up, it being his mountain by right of priority. The rock was as bad as I have encountered; not too steep, but so treacherous that even

the rope was a danger. Within an hour, however, Rawles had finished his delicate leading, and we were on the summit ridge. No sign of a cairn, and not even the shred of a prune. It was a climactic moment.

The sight of the southern face was our first disappointment. It is a slope of tumbled scree, and a good walker might be able to find a way up it. Fortunately, however, there was no sign that anyone had. We built several cairns on several summits, and left a message in a sardine tin. It was somewhat inexact in describing the route, because I seem to be unable to tell east from west. But future climbers will be perplexed by more than inaccuracies; for at the end, after our five names, appears the parenthesis: "(And Tallulah Bankhead!)" This cryptic addition is simply explained. Miss Woolsey had a dream, the night before the climb, that we reached the summit and found a cairn upon it. In the cairn was a note: "Crossed this mountain on skis last winter. Tallulah Bankhead."

From the ridge we had our first good view of the needles to the south. Adventures were in store. The great knife-edged ridge running toward Cloud was hidden from us, a short quarter-mile away, by the crag of Mount Woolsey. The eastern and western faces, as we saw them in silhouette, looked too precipitous to be considered; the northern face rose from an airy col below us in an equally uninviting series of cliffs and ledges. The southern side, and the ridge beyond it, were still hidden from us. But in that unknown, if anywhere, we should have to find our future route; what we could see looked hopelessly unprepossessing.

The east face of Black Tooth is transected by a wide ledge, or rake, running obliquely down from the summit to the snow. Miss Woolsey and my brother decided to descend by this route, onto the glacier to the east of the ridge. They could then reconnoiter the invisible peaks, and return to camp by a long valley on the far side of Buffalo Back. This would be a roundabout way, but it appeared to be the only feasible access to the southern peaks.

The rest of us could not share this commendable energy. We therefore roped to descend by the way we had come. Rawles had chosen a route of ascent at the eastern end of the face, but wisely varied it on our return by a zig-zag across almost to the middle. This is a distinct improvement, since it reduces the

danger from dislodged stones. We reached the ledge without incident, and lazed in the sun for almost an hour.

I have never seen such a day. Always it was raining somewhere; lines of high black cloud across half the sky, throwing purple shadows on the foothills and plain. Over the Big Horn basin was sun, and a vague suggestion of the Shoshone peaks mixing themselves with cloud. Above our heads the fair and foul met in a changing shadow-line; someone remarked that it was two days running into each other. The east was dour, and the west was sunlight, and all morning we were where they met.

But we could not spend the afternoon watching the show; too soon it was time to leave. I was anchoring down the couloir, in its narrowest part, when I heard an explosion in the cliffs above us. A few endless seconds of waiting, and then the vicious hum of a stone. It passed some twenty feet to the right, burst below us, and whirred its particles off into space. A belated gesture, and the only one of the sort which the mountains made. But it is worth mention, as a sign that the couloir should be approached with a well-cocked eye.

We returned lazily to camp, to find the other two there before us. They had scrambled down from Black Tooth without trouble, and had found that the peaks on the southern ridge were all we could have hoped for. Beyond Mount Woolsey they had seen the Innominate, which looked more formidable than anything we had yet discovered. (It was.) Most encouraging of all, the side valley which they followed down was a long but feasible route of approach. Our opinion of the Big Horns began to rise.

We returned to Tepee for a few days' rest, and on July 10th packed in to camp again. We had scarcely reached it when Miss Woolsey was recalled to New Haven by the sudden death of her father. This blow deprived us of one of our best climbers, at just the moment when we were finding more difficult mountains.

The gap which she left was never filled. But we soon had company, as welcome as it was unexpected. Warren Gorrell, whose cairn we had found on the north face of Black Tooth, returned alone to make another attempt at the direct face climb. He failed twice, but succeeded the third time, and reached the summit in five hours from camp—an extraordinarily creditable piece of solitary mountaineering. His is undoubtedly the most direct route of the three which have been tried. It involves one

difficult pitch, immediately below the ledge, and just where there is the maximum danger from falling stones. Our route, therefore, seems preferable until the snow has entirely melted from the upper face, which this year was about the middle of July. After that time, the melting snow on the lower slopes would probably make our couloir at least disagreeable, and Gorrell's route distinctly superior.

On July 11th, the day when Miss Woolsey left, my brother and I climbed Hallelujah. Our initial motive was to find a practicable way to the southern peaks over the col between Hallelujah and the northeast ridge. If there were one, it might save several hours over the valley way. We scarcely hoped to climb Hallelujah itself. I surreptitiously tucked pencil and paper into my pocket, on the off chance of another summit cairn; but it was a chance which neither of us mentioned.

The couloir on the north side of the col gave us three hours of excellent climbing. We skirted its lower opening, for fear of falling stones, and came into it where the bed was filled with steep, firm snow. The climbing was somewhat reminiscent of the Matterhorn couloir on the Riffelhorn: bits of snow, long sections of moderate rock, and two pitches of marked difficulty. One was at the end of a short ice traverse, where a wet and overhanging chimney blocked the floor of the gully. The second was an arm pull-up on a scanty flake of rock, one of the places where one's boots seem to be made of lead. With these two exceptions, the going was easy enough. But it was 1.30 before we pulled ourselves onto the ridge and rummaged for some very welcome sardines.

The near view of Hallelujah is completely disheartening. The ridge rises almost vertically from the col, for a distance of some 60 ft.; it looks impossible to ascend it directly, and more so to turn either flank. The only hope we could see was a twenty-foot sliver of rock, balanced on end upon an invisible ledge. If this rock were firm, there might be a way between it and the wall. The chances seemed meager, but pride demanded one effort. We changed into sneakers, and my brother gloomily began to climb.

It was the most surprising pitch I have encountered. The boulder was as firm as the mountain, and holds which were invisible from below appeared exactly where they should be. Within a few minutes we found ourselves, puffed and amazed, on the

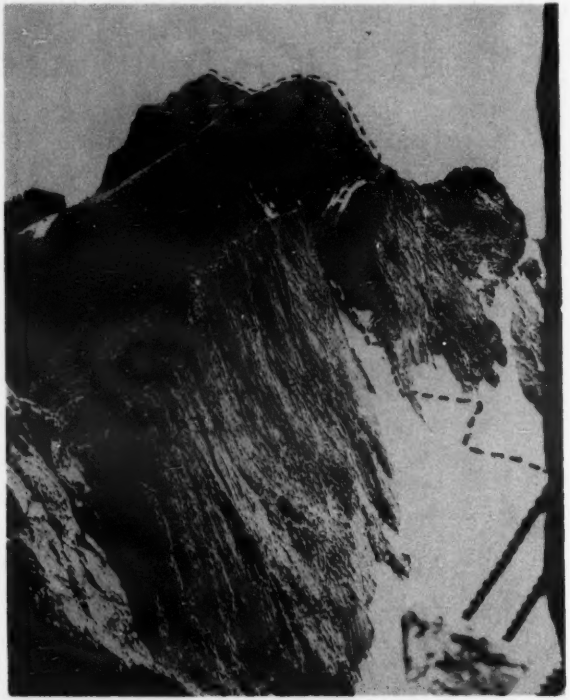
easy ridge which is all the rest of the peak. An hour and a half of scrambling, over unbelievably good rock, took us to the summit, and another hour back to the col. Our imposing mountain had concealed its weak spot by very enjoyable bluffing.

Our next problem was on a larger scale. Mount Woolsey is within a few feet of the elevation of Black Tooth, and from every angle—when it can be seen at all—is a greatly superior peak. The only approach seemed to be the south ridge, beginning at the col between Mount Woolsey and the Innominate. This col might be reached from the east by a couloir or by the face; above the col, the general angle of the ridge looked possible.

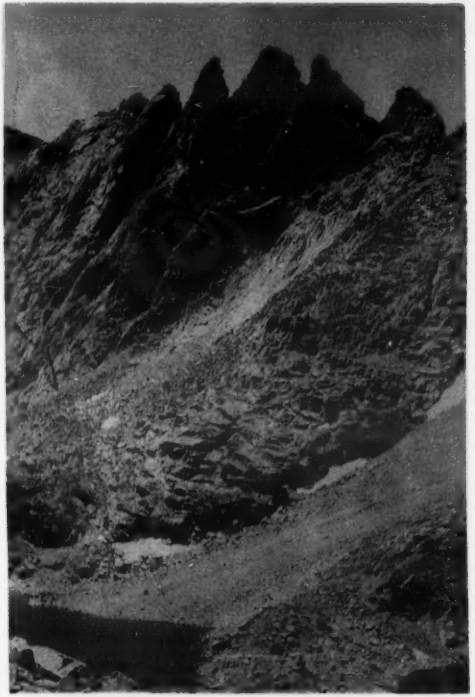
We were somewhat relieved, and somewhat nettled, to find that Mount Woolsey also began with a bluff. Within an hour, Rawles had led us at a merry pace over easy, broken rocks from the glacier to the col; the lower face had turned out to be no more than an invigorating scramble. But the south ridge was to be taken more seriously. A fantastic jumble of slabs and gendarmes slowly resolved itself, as we worked our way up, into a real knife-edge. No single pitch was quite the limit of what we could do; each unclimbable gendarme was provided with one detour, and usually just one. After an experience on the east flank—which ended with an embarrassingly naked slab and an equally embarrassing retreat—we stuck as close to the ridge as possible. We were first on one face, then on the other, then on the ridge itself; the rock was superb, and none of the climbing really stiff.

Finally we were under the summit. I was hunting for a way onto the ridge, when Rawles suggested that we try the east face. I thought he was flippant or crazy, for all I could see of the face was smooth cliff. But when I joined him, I saw his point. From where we stood, a little ledge meandered up across the precipice toward what looked like the top. There was vertical wall above and below; but the ledge was some four feet wide, and at an angle of 30° or so. Since the ridge looked none too alluring, the ledge it was. Up it, around a shelf on the edge of nothing, a scramble over some boulders, and there was the summit. I have never seen a climb with such an easy and sensational ending.

We luxuriated on top for three-quarters of an hour, being surprised that we were there. Then we started down, with storms on each side of us. The wind grew worse, and we felt a few drops from one cloud or the other; our boots were 1,500 ft.



BLACK TOOTH AND NORTHEAST RIDGE
FROM THE SUMMIT OF HALLELUJAH



THE FIVE FINGER PEAKS, WITH THE THUMB
ON THE RIGHT

THE ARÊTE OF THE THUMB
SEEN FROM THE INDEX FINGER

THE MIDDLE SUMMIT OF THE INNOMINATE
SEEN FROM THE GARGOYLE

below, and it would have been a slow descent in wet sneakers. There was heavy rain in the lowlands, and the storm lighting on the plains was magnificent. But we had the show without paying for it, and stayed in sunshine most of the time. It was our only day in the mountains when the weather was disturbing.

Our next problem was again on a small scale, smaller even than Hallelujah. The Five Fingers are glorified practice-rocks, like the Untergabelhorn at Zermatt. But like it, they are easily accessible and provide some excellent climbing. The Thumb, on the northern end, has the most sensational traverse: an airy ridge, dropping abruptly into the col toward the Index; the descent is difficult, and there seems to be no way off the mountain from the col. The Index, from this col, gives some very stiff work, and the descent by the east face involves one extremely satisfying chimney. Third Finger is the highest and easiest; its only virtue would be for a training scramble. The Ring Finger, on the contrary, has some excellent problems on its northern face, and a delicate descent on its southeastern flank. The Little Finger is merely a walk, as is also a small wart beyond it. The Index provides the most interesting climbing, but there are enough good pitches on the others (unlike the peaks of the Untergabelhorn) to repay a traverse of the entire hand. The rock is superlatively good, and the climbing leaves nothing to be desired except more of it.

Our final mountain was the Innominate. It turned out to be the climax of our expedition, a magnificent peak. Our climbing hitherto had not taxed us to the limit. The questions had been more those of mountaineering than of actual climbing. The Innominate provided us with ample problems of the first order, and also with some of the stiffest rock work I have encountered. If we had designed the peak ourselves, it could not have been better fitted for the last day's work.

The east face is steeper than the Montenvers face of the Grépon. From the summit to the glacier, for 1,200 ft., it is one almost vertical sweep of rock. The west face is steep, though in a less ultimate way, while the north and south faces are merely the angles where the other two meet. There are three summits, separated by gaps which seem to have been made by a giant saw, and which render a traverse practically impossible. It does not look friendly, and it is not.

We decided to attempt the west face, which could be reached only by the col between the Innominate and Mount Woolsey. The east face, as seen in profile from this col, had a sobering effect on our enthusiasm. It may one day be climbed, but never by anyone who spends too much time looking at it. There is one break in the wall: an alluringly awful ice couloir connecting the glacier with a gap beyond the middle summit. All we saw of it was a winding ribbon of ice between straight rock walls, curving off and up into the heart of the mountain. A large snow-patch clung to the precipice above. While we watched, the snow broke away, and raked the lower couloir with an avalanche. That approached seemed even less attractive.

Immediately to the south of us was a small needle, crowned by a fantastic rock which leaned westward into space like one of the monsters on Notre Dame. This Gargoyle Pinnacle gave us some excellent climbing. The ascent from the north was longer than we had expected, and stiff work all the way; it was of much the same caliber as the better parts of the Trift ridge on the Zinal Rothorn. The gargoyle itself was without holds, but at just the maximum angle to which rubber soles would stick.

The rest of the traverse was easy, but it was 3.30 before we had crossed the west face to a point under the highest summit of the Innominate. We had lost considerable altitude in the process, and must have had a thousand feet left to climb. There was obviously not time to do it, but equally obviously it had to be done. The first five hundred ft. presented no great difficulty, but the climbing was never easy; we stuck to the center of the face, and were able to make rapid time. Then the rock steepened to the nearly vertical (Montague's "inexperienced clinometer" would probably have said about 60°). The party by now had been reduced to my brother and myself; the others had stopped at various points, where they were safe from falling stones and able to watch in comfort.

We wondered whether there would be anything to watch. There were three possible ways up the next thirty feet, but none of them looked probable. All three ended in a slab of evident steepness and dubious character. My brother tried his favorite of the three, a shallow trough without handholds. It brought him to the slab, after some very strenuous climbing, but revealed no way of securing his return. The slab was as steep as it looked,

with rounded, water-worn holds which were on the thin edge of adequacy. But even those were preferable to slithering back, and foot by foot he worked up over them. At last he reached a ledge where there was a perfect thank-God belay, and our troubles were over. I followed him, with fervent delight in the rope, and soon we were scrambling up the last easy cracks under the top.

It was 4.30 when we came on the ridge, and already high time to be getting back. The actual summit is a great boulder, looking like an overgrown tin can dropped by some gargantuan picknicker. It seems much more impossible than the Baton Wicks, and we were quite willing to persuade ourselves that it would be an affectation to consider it as the summit. We therefore built our cairn on the ridge, and left a note of the route. I had a horrid fear afterward that I had described an ascent by the middle of the east face, instead of the west. If so, it will surprise any future climbers. We dropped a stone over the east face, a foot from the edge, and it was seven seconds before we heard it strike.

Our descent was rapid and uneventful. We rappeled down the one arduous pitch, gathered our party by installments, and within an hour were back at the col again. But we were too late; darkness overtook us at the foot of the valley, and a walk which would have taken little more than a half-hour by daylight consumed three weary hours in the dark. It was midnight before we saw our camp-fire, and signaled to our very worried friends. They came out with flashlights to guide us over the last heart-breaking scree, and back to the most welcome dinner and the most welcome corn whiskey which I can remember. We had been going for eighteen hours, and next morning were still tired enough to be almost reconciled to breaking camp.

The Innominate was by all odds our most difficult ascent. It need not have taken so long, but it would always be a good day's work. This is not true of all the climbs; the one major drawback of the Big Horns is that they are not big enough. It is not a question of altitude, for the summits are as high as many of the Alps, and there is little difference in the distance to be climbed. But the valleys run up to 11,000 ft. or so, and usually end in snowfields which abut against the mountains. The actual climbing, consequently, is for the most part within a vertical compass of less than 2,000 ft.

Anyone accustomed to the Alps will also miss the variety afforded by snow and ice. There are glaciers and snow-slopes in the Big Horns, and plenty of superb glissading. But our route on Black Tooth, and the approach to Hallelujah are the only ones which involve any snow-climbing, and that of a very rudimentary sort. The technique of rock-climbing is really the only one which is called into play. While this is a drawback, it has its compensation in the wide variety of rock, and hence of technical problems.

It is difficult to describe little-known mountains without giving a false impression. I am aware of the limitations of the Big Horns; they will always seem a bit like toy mountains in comparison with the peaks of the Oberland or the Valais. At the same time I have no wish to belittle the range as a climbing center, for we found it vastly better than our best expectations. As a gauge for the caliber of these peaks, it might be illuminating to make a few rough comparisons with the Alps. There are obvious reasons why the two are not accurately comparable; but a few resemblances, based on the general difficulty of certain climbs, do suggest themselves. Black Tooth, for example, is of about the same order as the Rimpfischhorn. Hallelujah resembles the west ridge of the Besso, approached for good measure by way of the Matterhorn couloir. Mount Woolsey inevitably recalls the summit ridge of the Schreckhorn, just as the Innominate recalls the Chamonix peaks—the Charmoz, or some bits of the Dru.

A great deal of fascinating exploration is still to be done. There is a spire to the west of the Five Fingers, which looks from a distance like five hundred feet of smooth impossibility. There is the sensational ascent of Mount Woolsey from the north. There are the two other peaks of the Innominate, and even conceivably the traverse of all three. Still less conceivably, there is the east face of the Innominate. The east face of Cloud has been often attempted, but we could find no record that it had been done. The most gluttonous mountaineer would find repletion in the whole traverse from Cloud to Black Tooth, and the most brilliant rock-climber would be given pause by the cliffs of Hallelujah.

There are plenty of problems to try the most expert, and plenty which are *für Geübter leicht*. Any one of the summits could be

reached by a party of moderate strength, while a really strong one could find some very sensational routes. As a whole, the mountaineering is certainly equal to what we found in the Tyrol; it is on much the same scale, for example, as that in the Stubaital. The absence of ice in the Big Horns is offset by vastly superior rock, and by the wide variation in the nature of the different peaks. The range is accessible, and the peaks are very close together. We returned to the East with the conviction that the mountains we had happened upon were ideal for a short climbing holiday. They certainly provided us with some of the most superlative fun of our mountain experience.

The Bugaboo-Howser Watershed, Purcell Range

J. Monroe Thorington

ACROSS the Columbia River at Spillimacheen, above a line of slender, waving poplars, rises the range of mountains within the forks of the Salmon, all powdered with fresh snow, Mt. Ethelbert towering above the rest. Kingfishers dart in and out among the reeds at the river's bank, and a giant hawk circles lazily in the azure sky.

It is the morning of June 22nd, 1933, on which my wife and I, with Conrad Kain and his nephew, Isidor, are leaving for the Bugaboo Group. The river being in flood, transportation on the Kootenay Central Railroad has come to complete standstill because of washouts, and the air is torn by recurrent concussions as log-jams are dynamited.

Opposite, on the western bank of the Columbia, a canyon of brownish rock forms the mouth of Spillimacheen River, coming from its faraway northern sources in the Purcells, and meeting the main river in an acute upstream angle. Across a shoulder of jackpines, a depression marks the valley of Bugaboo Creek, almost at the place where it is joined by the Rockypoint stream.

Following the old road, gradually rising, we eat lunch by the bridge at Driftwood Creek, whose swift, dark waters suggest lurking trout, and camp that night fourteen miles out on the Bugaboo stream. Gophers squeak as we pitch our tents, and appetizing odors from the fire give promise of an alluring grub-pile. A dome-like hillock of ancient, tree-covered moraine upstream would have been a perfect site for a Rhine castle; but here is only wilderness, with battlements of snow-clad ridges spread across the sunset.

Next morning we walk ahead of the packtrain, passing an old cabin from which scuttles a surprised and indignant porcupine. The trail is bordered by forget-me-nots and columbine. On a rise, grass-snakes are sunning themselves on flat plates of rock and slither off in the underbrush. A young black-tail buck with velvety horns stands as if petrified in the burned timber. Further on, in a glade of emerald leaves, a brown mother-bear with her coal-black cub play in the dappled patches of sunlight, rushing

Photo J. M. Thorington

BUGABOO SPIRE FROM THE NORTHEAST

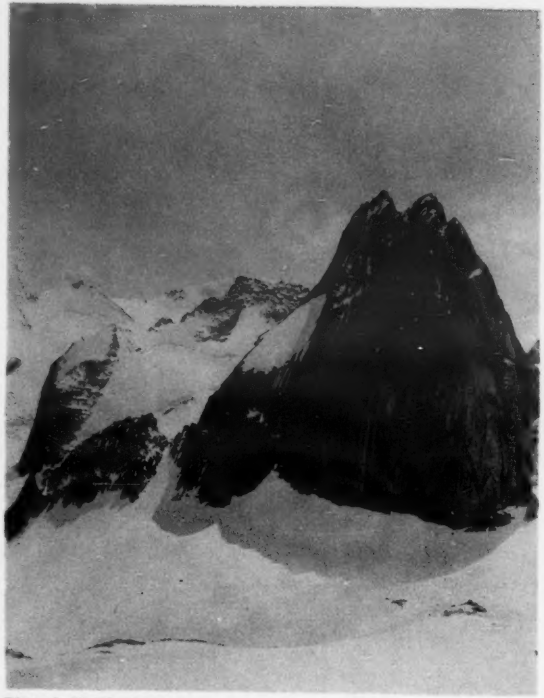


Photo J. M. Thorington

HOWSER PEAK, MARMOLATA AND SNOWPATCH SPIRE FROM CRESCENT SPIRE

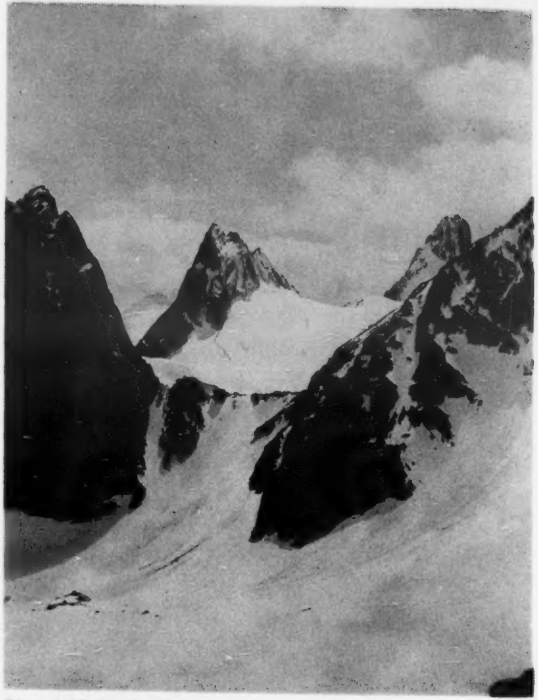


Photo J. M. Thorington

PIGEON SPIRE AND SOUTH TOWER OF HOWSER SPIRE SEEN THROUGH THE SNOWPATCH. BUGABOO, COL.

into the thicket on catching sight of us, their pads leaving broad depressions in the mud.

Twenty miles from the Columbia, a curious dike of rock is severed by the course of the stream, and Rockypoint Creek enters from the north. The line of the valley now swings to a southwesterly direction, and glaciated peaks come into view.

Indians and prospectors were the first to come this way, but the mineral claims proved to be little else than a "Bugaboo." There are many cabins near the sources of the stream, built in the "rush" of 1906; but they are rotting to pieces now and thick moss covers the broken logs. A lumber company built a road through the lower part of the valley some ten years later, but fire rendered much of the timber valueless.

Climbers in the Rockies long ago reported a group of needle-like peaks far off in the west,[1] and a near view of them was obtained by Longstaff and Wheeler while crossing the Purcells in 1910,[2] their route leading them from the Columbia through Bugaboo and Howser Valleys to Duncan River, revealing the unusual character of the towering spires adjacent to this portion of the watershed.

Conrad Kain, who took part in this expedition, returned with A. H. MacCarthy in 1916, ascending the loftier spires of the group immediately north of Bugaboo Pass.[3] O. E. Cromwell, with Peter Kaufmann and Conrad Kain, climbed several of the remaining peaks in 1930.[4]

No detailed map accompanied any of the published descriptions and the topography of the area remained obscure. Wheeler, in 1910, occupying camera stations along Bugaboo Creek, was hampered by bad weather and did not complete the work, owing to the difficulty of connecting with his former stations in the Dog-tooths and Selkirks.

About seven miles above Rockypoint Creek, Bugaboo Valley forks, a western branch coming from Bugaboo glacier, some three

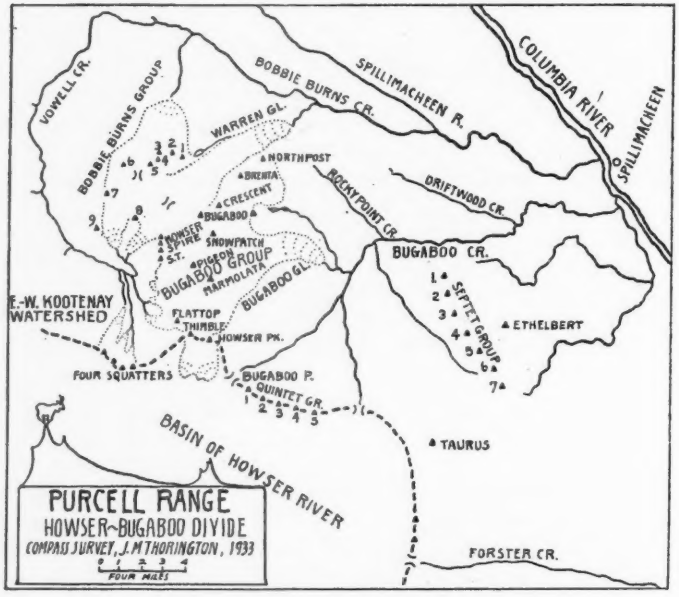
[1] From Mt. Victoria they lie to the right of Mt. Huber, between the north tower of Goodsir and Chancellor.

[2] Longstaff, T. G., "Across the Purcell Range of British Columbia," *G. J.*, xxxvii, 589; *C. A. J.*, iii, p. 26.
Wheeler, A. O., "Expedition to the Spillimacheen Mountains—Photo-topographical Surveys," *G. J.*, xxxvii, p. 601.

[3] MacCarthy, A. H., "The Howser and Bugaboo Spires, Purcell Range," *C. A. J.*, viii, p. 17.

[4] Cromwell, E., "In the Bugaboo Group," *A. A. J.*, i, p. 296.

miles further on, and a longer southwestern stream swinging down from Bugaboo Pass on the watershed. A large cabin, still kept in good condition by prospectors, is situated at the forks. Trail distance from the Columbia to Bugaboo glacier is said to be thirty miles.



The logging road had now come to an end, and the packtrain caught us up. A faint trail wound through the timber, often crossing the stream, with stagnant pools reddened by iron stain. Marginal willows, until recently bent into the water by the weight of spring snow, flaunted a metallic lustre. The glacier and its icefalls seemed stupendous in the evening light, suddenly in view with spires shooting up from the snow in steepled sheerness. We made camp in a small clearing among the jackpines.

The Bugaboo Group culminates in Howser Spire (10,950 ft.),[5] a broad jagged peak, with its magnificent detached south tower

[5] Elevations given are chiefly MacCarthy's aneroid readings and are subject to revision.

nearby. Howser Peak (10,244 ft.) lifts a massive snowy pyramid further south and forms the northern buttress of Bugaboo Pass (7,160 ft.), by which the main watershed is crossed to Howser Creek. Between Howser Peak and Howser Spire are the lower Thimble and Flattop Peaks. Marmolata (Center Peak), Pigeon, Snowpatch and Bugaboo (10,250 ft.) Spires form an almost parallel line a short distance to the east. Northeast of Bugaboo Spire the group continues and terminates in three summits: Crescent, Brenta, and Northpost Spires. A large névé surrounds the peaks, extending fingers eastward between the frontal summits and giving rise to the chief glacial tongue draining to Bugaboo Creek.

Topographical problems immediately presented themselves: What was the relationship of the Bugaboo Group to other Purcell Peaks? Was Howser Spire on the main watershed; or did it follow the arrangement of other great summits, such as Jumbo and Farnham, in being placed on the eastern slope? There were rumors of fine mountains to the north, along Bobbie Burns Creek; we had seen them from the Rockies. Would they prove higher than the Bugaboos, and were there even more northerly Purcell Groups attaining elevations of 10,000 ft.?

On June 24th, Conrad and I ascended Howser Peak, already attained by the parties of MacCarthy and Cromwell, mounting the long snow-covered glacier and crossing the plateau to the peak's northern angle. From the summit certain things at once became clear.

Between Bugaboo Pass and Thimble Peak the westerly drainage is into Howser Creek. Westward from Thimble Peak, a low jagged ridge extends to the snowfield—a miniature ice-cap—embracing the massif of the Four Squatters, first reported by Wheeler. North of this ridge there is a deep basin into which Flattop, Howser Spire and, in fact, the entire northwestern corner of the group drains. We could see that the stream soon makes an acute bend to the north. It could be nothing but Vowell Creek,[6] a large southern fork of Bobbie Burns Creek, draining to the East Kootenay slope. Thimble Peak is thus the local hydrographic

[6] MacCarthy thought this basin contained the source of Howser Creek; but the course of the watershed is much more difficult to construct upon such an assumption, which implies gross error in the position of Vowell Creek on government maps.

apex, with slopes to Bugaboo, Howser and Vowell Creeks. Howser and Thimble Peaks are, therefore, the only two summits of the group located on the main watershed, Howser Spire and the remaining peaks lying east of it.

In tracing the Purcell watershed southward from the Dog-tooths (as the Purcells within the Columbia-Beaver angle are called), there is a stretch from the Beaver-Duncan Pass and the head of Spillimacheen River to Howser Creek about which little is known, although it is doubtful whether any of its peaks attain an elevation of 10,000 ft.

The known portion of the watershed may, therefore, be said to begin at the Four Squatters, the highest point of which is 9,743 ft. Lying between Vowell and Howser Creeks, this massif sends several sizeable glaciers into the amphitheater of Vowell Creek, the watershed thence taking an easterly course to Thimble Peak. It now makes an abrupt turn to the south, crosses Howser Peak and descends to Bugaboo Pass.

We could look directly down into this saddle. A little further southeast on the watershed is a low glacial pass (7,100 ft.), from which is derived much of the water in the southwestern terminal fork of Bugaboo Creek. Between the two passes is the Quintet Group—five peaks, none of which rise much above 9,000 ft., although they are glaciated on their eastern slopes. The glacial pass, mentioned above, leads over to another branch of Howser Creek.

Indeed, in the succeeding arc of watershed as one continues south, Howser Creek presents its widest terminal ramifications. The elevations are unimpressive, 8,000-8,500 ft. About twelve miles southeast of Howser Peak is the mountain named Taurus (Wheeler), a black rock tower, just east of the watershed, apparently 10,000 ft. high. Three miles further south are two writing-desk wedges, somewhat above 10,000 ft., both of them on or near the watershed and having snowfields on their eastern slopes. Just south of these is a low pass, connecting branches of Francis and Howser Creeks, situated at the apex of the watershed arc, which now begins to swing to the southwest and contains a low pass between Howser Creek and the north fork of Horsethief Creek.

We looked with interest toward the east. Down Bugaboo glacier one saw the Septet Group (Longstaff)—seven peaks forming a curving range west of Mt. Ethelbert. None of them is on

Photo I. A. Richards

BUGABOO, SNOWPATCH AND PIGEON SPIRES FROM NORTH

Photo I. A. Richards

PEAK 7, BOBBIE BURNS GROUP, FROM BASE OF BUGABOO SPIRE

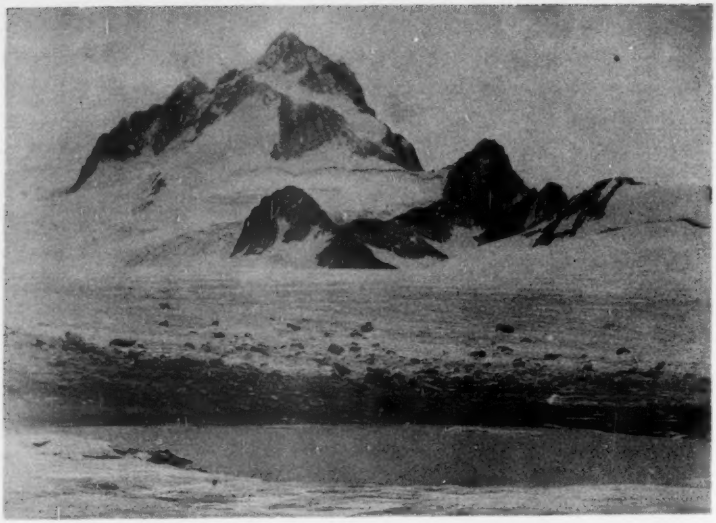


Photo I. A. Richards

HOWSER SPIRE FROM NORTH (WARREN GLACIER)

Photo I. A. Richards

BUGABOO SPIRE FROM WARREN GLACIER

the watershed, nor does any rise to 10,000 ft. They block the forks of the Salmon (Templeton and Dunbar Creeks) from reaching the main divide, and a long unnamed creek, winding through flat alpland, drains their western flanks into Bugaboo Creek, joining that stream half a mile above Rockypoint Creek.

Level readings within the Bugaboo Group were as follows: Pigeon +1°; Bugaboo +2°; Snowpatch —2°. Howser Spire remained in cloud. Relative elevations, therefore, in descending order, would seem to be: Howser Spire, Bugaboo Spire, Pigeon Spire, Howser Peak, Snowpatch Spire. The remaining peaks are lower than Snowpatch, which is not far from 9,700 ft.

On June 25th, my wife and I occupied ourselves by marking camera stations at the Bugaboo tongue. Camp being but half a mile from the terminal ice, a trail was soon cut. One-quarter mile from the glacier there is a wide arc of ancient terminal moraine, timber-covered and forming a rampart averaging twenty-five feet above the valley-floor. Several lower and less continuous morainal ridges intervene between this and the ice. The lateral moraines are of great size, and the tongue a century or more ago must have been extremely grand. A rectangular block, just on the north side of the stream's emergence, was painted with numerals 1933 in white, and will serve to record the position of terminal ice at that time.

While we walked several hundred yards up the tongue, a goat brought her kid to an alkaline lick in the silt and allowed us to approach to within thirty feet. In following days we were not favored with the best of weather for climbs, but enjoyed interesting experiences in stalking these quaint animals with our motion-picture camera. Apropos of shooting, Conrad created the high light of the summer by his remark to me: "Py Gott, Doc, dere is a helluva space around a goat!"

Conrad and I made an ascent into the northeast corner of the group on June 27th, following a goat-trail from the middle of the north lateral moraine into a snow basin where there are two small frozen lakes. Without great difficulty we were the first to stand upon the summit just northeast of Bugaboo Spire; it is about 9,400 ft. high, with two large gendarmes on its south ridge. Its position and shape suggest the name of Crescent Spire and, as a viewpoint, it is magnificent.

The sheer peaks of the group are close at hand, the smooth eastern walls of Bugaboo and Snowpatch Spires being especially impressive. Beyond Marmolata and the snowy shoulder of Howser Peak rose Farnham and Jumbo, across the head of Horsethief Creek. A little northeast of us the slender Brenta Spire stood almost in line with the Goodsir Towers in the Rockies.

The peak on which we stood, lining up with Bugaboo, Brenta and Northpost Spires, forms a wall between Bugaboo glacier on the south and the larger parallel tongue of Warren glacier on the north, the latter draining through Warren and Bobbie Burns Creeks into the Spillimacheen. Up to the present time it has been almost unknown.

The northern margin of Warren glacier is formed by the Bobbie Burns Group, nine fine peaks,[7] the highest of which (No. 7) may be above 10,500 ft. Though not as sheer as the Bugaboo towers, several of these will afford excellent climbing with intricate approaches.

A broad snow pass between Bugaboo Spire and Peak 5 leads over from Warren glacier into the basin of Vowell Creek, which drains the western side of Howser Spire. Between Peaks 5 and 6 a lower snow pass leads out of this basin toward the north, apparently to a névé that mantles the Bobbie Burns Group on that side and is conspicuously visible from the Lake Louise Mountains. Peak 7, the highest point, rises as a broad, symmetrical mountain in the center of this glacial system.[8]

Below Peak 1, on the north moraine of Warren glacier, there is a frozen lake. It is quite possible that the eastern peaks of this group are those whose summits are visible as one looks south from Parson station in the Columbia Valley. It is likely that they form the most northerly group of Purcell Peaks attaining elevations above 10,000 ft.

---

[7] Mr. Wheeler's excellent photographs, kindly placed at our disposal, have been of service in constructing the southern section of the sketch-map, the remainder being based on our own compass triangulation. The peaks of the Bobbie Burns group are indicated by number from east to west.

[8] This peak was ascended in Aug., 1933, by Dr. I. A. Richards (A. C.), Mrs. Richards and Conrad Kain, in twelve hours by way of Bugaboo glacier. Dr. Richards writes: "I have certainly the impression that all the slopes of our peak drain—one way or another—into the Spillimacheen River." Descent was made by Warren glacier, the party bivouacking at the base of Peak 1, Bobbie Burns Group, and returning to camp on the following day by crossing alpland east of Northpost Spire. It proved to be Kain's last climb.

On June 28th we took the packtrain through fallen timber and swamps into the southwestern fork, camping at a cabin below the slopes of Bugaboo Pass. Light rain was almost continuous.

Two days later, Conrad and I climbed to the low glacial pass in the watershed south of us. But fog and snow-squalls came down, and we sat on a patch of shale listening to roaring streams in the Howser basin, with all landmarks blotted out—tantalizing, for we shall never be there again.

To say we saw nothing would be a mistake. In the very top of the pass there was a blue, ice-covered lakelet. A bear had come that way, neatly dodging a crevasse, and cautiously patting the ice from the shore outward until it was broken and he could slake his thirst. And, close behind, parallel, were the tracks of a wolverine. Their trails went over the hill, into the mist, soon to be blotted out by falling snow; not a sign of the animals themselves; not a sound save the plaintive chirp of a finch that followed us, and the distant rushing of water.

On July 2nd at Spillimacheen we parted regretfully from Conrad. For, as that teller of tales admits, "Vimmens lof to tell me of their unhappy marriages, and their experiences of true romantic lof!" And he in turn, confiding souls beware, had told us—well, things not quite relevant to the contours of mountains.

Some Winter Climbs in the Alps

WALTER A. WOOD, JR.

SOME forty years ago a strange race took place in the Bernese Oberland.[1] A group of men gathered at Lauterbrunnen on a fine winter's day. Half of them wore a comparatively unknown contraption called skis; the other half wore the more conventional snowshoes. The race course lay from Lauterbrunnen over the Wengern Alp to the Kleine Scheidegg and down to Grindelwald. The purpose of the race was to determine the value of skis relative to snowshoes over long distances. History does not relate whether skins were allowed skiers; however, they won by a devastating margin.

Since that time a rapidly increasing number of enthusiasts have set out each winter to conquer the greater peaks of the Alps. The summits of the Bernina chain and those of the Bernese Oberland first attracted attention, they being more readily accessible in winter and better adapted to skiing than those of the Pennine chain; also the major peaks were easier to subdue and offered less danger of avalanche.

Gradually certain facts became apparent. Climbers found that with skins attached to the bottoms of their skis they could climb as fast and with as little effort as in summer; that the speed at which one could regain the hut or the valley compensated the shortness of the winter climbing day; that under normal conditions the cold was not intense and that rock ridges were often in better condition than in the summer. Certainly one and all learned one great fact: that the *cabanes* were empty and that the hills were theirs! No longer was it necessary to follow in the footsteps of the *caravanes* of the summer months, or to be greeted on a summit by a scattering of tin cans or a swirl of trampled snow. The Alps had been rediscovered.

On a warm March day in 1926 we motored up the Rhone Valley from Vevey and that evening arrived at Stalden in the Vispthal. The following morning found us trudging up the rack and pinion railway towards Zermatt (the railway was not then

[1] Marcel Kurz, *Alpinisme Hivernale.*

running in winter) embarking on our first winter climb. The start was not auspicious. The day was as warm as an August one, a hot haze hung over the valley and gushing tributary streams added to the boiling waters of the Mattervisp. Heavy sacks and a warm day are known to be conducive to lassitude, we were easy victims, and stumbling into Randa over the first patches of snow we subsided onto a friendly bench and loudly demanded a horse-drawn conveyance to Zermatt. This fortunately was forthcoming and late in the afternoon we drove triumphantly into the Mecca of the Alps.

The next morning we put on our skis and with the kinks in our muscles somewhat smoothed out by the tramp up to Randa, set out up the Zmutt Valley to the Schönbühl Hut contemplating great deeds on the Dent Blanche. That evening we witnessed a spectacle I shall long remember. We had expected to find Maurice Crettex and his son Nestor at the hut but they had not arrived. At about 9 o'clock we went outside to look at the weather and happened to glance up at the Col d'Hèrens. There we saw what appeared to be a star twinkling on its very edge. Soon another "star" joined the first, and then another. They could only be the lanterns of Maurice and a party of climbers. Slowly the lights swung down the glacier weaving back and forth, then disappeared behind the black mass of the Stockje, to reappear after a time low down on the Tiefenmatten glacier whence shortly after they gained the hut.

The next day dawned cloudy but cold so we spent it skiing on the glacier and going over for what seemed the thousandth time our plans and equipment for the morrow's climb.

We left the hut at 3 A.M. and on hard snow skied quickly up the left moraine of the Schönbühl glacier to the foot of the Wandfluh rocks. Here we left the skis and set to work on the steep slope of snow covered rocks leading up to the ridge. The snow was deep and firm, but realizing what a few hours of hot March sun would do to it we hurried on and gained the ridge as the sun rose over Monte Rosa. Once on the broad back of the Wandfluh we tramped up towards the Grand Gendarme, but were soon reduced to chipping steps in the hard snow below the heavily corniced ridge. The instability of these cornices was firmly impressed upon us when, as we were nearing the foot of the Grand Gen-

darme, a section more than a hundred feet long suddenly came loose and roared down to the glacier.

A cold wind now set in and long cloud streamers appeared from the west. As long as we remained below the ridge we were protected, but such tactics entailed cutting steps across a wide and steep ice slope. We preferred the wind. So up we worked following the usual summer route past tower and cornice to the final stretch of ridge. Here we met the full blast of the wind. Clouds were rolling up from the valley and long snow streamers were being blown far out over the Viereselgrat. What remained of the ridge would cost us at least an hour and certainly frostbite, so sadly but no doubt wisely, we decided to turn back. Quickly we made our way down to the Wandfluh. Its eastern snow wall was still safe and we ploughed down it to the skis and were soon racing down the glacier under a gray afternoon sky, to arrive at the hut as the first flakes of snow began to fall. Such was our introduction to winter climbing.

The following day we skied merrily down the Zmutt glacier to the Staffel Alp, climbed slowly up to the Schwarzsee and in the early afternoon arrived at the Gandegg Hut on the edge of the Théodule glacier. The hut was in a terrible state; a recent storm (or was it smugglers?) had forced a window and the kitchen lay deep in snow and ice. That night was the coldest I have experienced in the Alps; the thermometer went down to 29° below zero Centigrade or 20° below zero Fahrenheit.

The next morning we waited until the sun was well up and then put on our skis and proceeded up the Breithorn. The day was cloudless and there was no wind. The snow was untrampled and no evidence remained of the crowds who yearly climb this peak. Only the occasional roar of an avalanche broke the silence. In fact conditions approached perfection as closely as they ever do. This was the first of three occasions on which I recall enjoying as nearly perfect weather as possible for the summit siesta. Oddly enough all three were in winter. The second was on Mont Blanc, of which more later, and the last on Popocatepetl, though the ascent of the tropical "Popo" can hardly be termed a winter climb in the Alpine sense.

A finer high mountain for skiing than the Breithorn can scarcely be imagined. With the exception of the last short ice slope it can be climbed entirely on skis, and the descent to the

Gandegg Hut and on the Zermatt constitutes one of the finest runs that is to be had in the Alps.

In 1926 the glaciers were in excellent shape and after a halt on the Breithorn plateau we sped round the amphitheater enclosing the upper snows of the Théodule glacier and straightened out into a bee line over gentle slopes and soon drew up in a swirl of snow before the hut. From the point where we put on our skis to the hut we had descended 800 meters in twenty-five minutes. The descent hence to Zermatt did not go so swiftly; the hot midday sun had softened the snow, and it was a wet but happy group which late in the afternoon skied into Zermatt.

The winter of 1926-27 is best remembered for its heavy February snowfall and beautiful March. Two weeks of almost continuous fine weather had left the higher mountains in admirable condition. Neither Pierre Vittoz nor I had ever climbed Mont Blanc. The snow monotony of the usual route had never appealed to either of us, and when once in summer we had had a chance to climb it over its fine eastern ridge, the weather ordained otherwise. Now we saw a chance to accomplish this climb and accordingly we wired Maurice Crettex to meet us at Les Tines the following morning. Assembled there we walked and skied up to the new Requin Hut where our spirits were dampened by a gray sky and a sprinkling of snow. The next day was fine again, but we gave the sun and cold a chance to harden the new snow, and spent it going over on the map the route of our intended climb. This lay first up the ice-fall of the Glacier du Géant, then to the Col du Midi, and from there over the Mont Blanc de Tacul and the Mont Maudit to the slopes of the Mont Blanc above the Col de la Brenva. Decidedly it was long; 7,500 ft. to climb and descend and twelve miles of ice and snow to traverse. We planned an early start, and in keeping with this intent climbed out of the only snow-free window of the hut a half an hour after midnight.

The moon was rising behind the Périades as we made our way up through the ice-fall of the Glacier du Géant then well choked with firm snow, and it lighted our way across the frozen snow-swamp of La Bédière and up the gentle slopes of the Col du Midi. The latter was reached at four o'clock and we had planned to leave the skis there, but the slope above the bergschrund on the Mont Blanc du Tacul appeared to be passable with their aid, and after a short halt on the lower lip we turned to the work of the day. A

great icicle formed the best bridge in sight, and to chipping small hand- and foot-holds up its twenty feet of instability Maurice now devoted his attention. It proved easier than it appeared and we were soon on skis again, zigzagging our way up the steep (for skis) slope and shortly after sunrise reached the ridge a short distance below the summit of the Mont Blanc du Tacul.

Across the shallow depression of the Col Maudit the east wall of the Mont Maudit rose in a 1,000 ft. of glittering ice, relieved only in two places by large crevasses, one across the lower break in slope, the other beneath the rocks of the upper north ridge. At the northern end of this ridge, just before it plunges steeply to the Glacier de Bossons, is a small snow col, the Col du Mont Maudit, and over this we planned to pass instead of actually gaining the summit of the Mont Maudit. So after planting our skis firmly and putting on crampons we followed a contour round until we reached a point below the first crevasse directly under the snow col. Fortunately a firm bridge in the form of the second icicle we had met that day spanned the gap just where it was needed and gave us no trouble. The slope above, on the other hand, proved to be the crux of the whole climb. After a few feet the good snow thinned out and we were reduced to hewing a ladder up an ice-slope 250 meters high. Three hours later we gathered under the second crevasse having averaged about 250 ft. an hour since embarking on the slope.

If nothing else, the mountain proved consistent, and graciously favored us with the only practical bridge a few yards to our left. However, instead of joining the two lips, the bridge was nearly horizontal, linking the lower lip to the vertical ice below the upper edge. It was obviously a large section of cornice fallen from the upper lip and wedged precariously. Now our leader was a man of no less than 100 kilos weight, and he had already carved a ladder in ice for three solid hours, so in order to give him some much needed rest and at the same time to give the frail structure a chance to survive, I was nominated to tackle the problem. At the further end of the bridge I received a pleasant surprise; a natural step had formed in the ice and supplied a solid base of operations. Ten feet above was a narrow crack which widened out to a width of several inches at the upper lip. The problem was to reach this crack. The first three feet went well, but try as I would I could not cope with a slight green bulge which pre-

vented me getting the point of an axe into the bottom of the crack. Maurice came promptly to the rescue, and with alarming speed crossed the bridge and lodged himself on the ice step. He was then in a position to give me a shoulder and allow me to get around the bulge and nick a few holds in the crack. Then jamming my axe and with the aid of a shove I managed to get well established and shortly after emerged onto the upper lip of the obstacle. A hundred feet above us was the col and we were soon gathered on it, sprawling in the warm sunlight.

Now, for the first time since leaving the hut, we could see the upper slopes of Mont Blanc. I remember feeling a distinct feeling of surprise and a sense of depression at the enormous scale of those final slopes. I rather think that I had expected to see the summit just around the corner (a picture fostered probably by several hours of hard work above 4,000 meters), in spite of the assurances of those who knew better that the last stretch from the Col de la Brenva to the summit would be the longest of the climb.

It was now past 11 o'clock and in order to complete the climb and return to the hut before nightfall we could delay no longer. Leaving all superfluous clothes and food, we ran down to the Col de la Brenva and prepared for some opposition from the Mur de la Côte; but the mountain had still more pleasant surprises in store for us. A coating of firm hard snow covered the reputedly icy slope, and though our pace was slow we experienced no check. Eventually we gained and passed the Rochers Rouges and the Petits Mulets, the only rocks we set foot on all day, but of the last three hundred feet memory bears but little record; a vague picture of the climbing irons of the man ahead moving rhythmically upward, then a feeling of relaxation as the slope lessened, became flat and dipped down.

To some people the view from Mont Blanc is unsatisfactory. To a great extent I believe this to be due to uninterrupted vision. No great peaks dominate one; the eye travels out over seemingly infinite distances, and the mind is seized with a sense of monotony. Be that as it may, to us it was glorious. Not a breath of air stirred, not a cloud could we see. We lit cigarettes with unshielded matches and watched the flame burn unwaveringly; cast our eyes down 12,000 ft. and watched the tedious gyrations of a miniature train making its ways up a nursery valley; then all too

soon we picked up the coils of rope and set off down, down the slope.

The shadows were lengthening as we made our way down the ice ladder of the Mont Maudit, and the sun sank below the distant plains of France before we had reached the Col du Midi. Night rolled up from the valley with astonishing swiftness and caught us before we were well on our way to La Bédière. No moon aided us on our descent of the ice-fall of the Glacier du Géant, and each crevasse appeared to our tired eyes as a giant serpent stretched across our path, each tightening of the rope seemed an intentional slight from the man behind. Shortly after 9 o'clock we again climbed through the window and a brew of hot tea sent us quickly to bed.

Two weeks later the same party gathered at the Jungfraujoch. A heavy fall of new snow had been followed by four days of fine weather so we expected good skiing. A visit to the Mönch suggested itself so we skied up to the Ober Mönchjoch and continued on foot up the ridge to the summit where we basked under a warm sun for two hours. Ten minutes after regaining the skis we were again at the Joch. The next day we climbed the Jungfrau and had the pleasure of using the coal-scuttle steps of the preceding summer from the Rothalsattel to the top. Then we became lazy and let a beautiful morning go by. Shame finally drove us forth and we climbed the Mönch again and waited until a fiery sun dropped into the sea of clouds before turning down the ridge. Still the weather held fine so we sped down to the Concordia Hut, skied up to the Grünhornlücke and back to the hut again, enjoying two of the finest glacier runs I have ever experienced. The run from the Joch to the Concordia Hut is over five miles long and lies over gently sloping glacier; after passing a few obvious crevasses below the Joch the entire run can be made "full out," and may of course be extended on the Märjelensee and down to Fiesch.

From the Concordia we decided to finish our trip by crossing the Lötschenlücke and descending to Goppenstein. The pass was gained in under three hours and after lunching at the Egon von Steiger Hut we enjoyed a marvelous run down to the railroad. I cannot find adequate words amply to encourage a lover of mountains to visit the Aletsch basin during the winter or spring months. Almost all the tributary glaciers provide fine runs, and he will find,

given normal weather conditions, the peaks, so overrun during the summer months, as he will want them.

At Christmas-time, 1932, I found myself again at Zermatt, irresistibly drawn back to this Mecca. A vague indescribable feeling told me that good weather was in store, and from the middle of December to the middle of January there were but two days when the sky was overcast. In fact, conditions were too good. The light snowfalls of the autumn had had but little effect on the glaciers which gaped wide and glistened in the sun. I had designs on the Lyskamm; they had to be postponed in favor of a less glaciated peak. Choice finally rested on the Rimpfischhorn and Julen Simon and I skied up to the Fluh Alp on the afternoon after Christmas. The ensuing night was bitterly cold with the result that when we awoke we found that Simon's watch, a coveted prize of the 1928 Olympic Games, had frozen and indicated a constant one-fifteen. How long this state had lasted we had no idea but we felt that, although there was no sign of the dawn, it must be getting late. Accordingly after a quick breakfast we set off on good snow towards the end of the long broad southwest ridge. For two hours we climbed over windblown snow slopes, aggravatingly interspersed with the barely protruding rocks of the summer talus, until we reached the ridge proper. Still the eastern sky betrayed no signs of the dawn, so planting the skis and putting on crampons we set off up the easy rocks to the first saddle of the ridge. From here on the light snowfalls and strong winds had played havoc with the glacier surface. No vestige of snow remained, save where in an irregular waving line the snow steps of the summer months were thrown into extraordinary relief, in some places as high as four inches above the surface of the ice. I had never before seen this formation, and it is conceivable that it is only visible during exceptionally dry winter months. The explanation appears simple. The snow in summer is packed down and frozen by party after party, then during a dry early winter the wind blows off the surrounding loosely packed snow, leaving the steps in relief.

As we made our way along and up this miniature wall the day at last proclaimed itself, and the east face of Monte Rosa seemed a wall of fire as we stopped for a second breakfast among the rocks at the upper end of the long glacier ridge. Above these rocks and beyond a shallow depression rose the final peak, and soon we

were engaged in cutting up a steep couloir to the rocks of the south ridge. These were warm and solid and we fully enjoyed a half hour's scramble to the highest point, there to spend an agreeable hour scanning the east face of Monte Rosa through field glasses. The descent to the skis was quickly done, but the evil wind-blown snow on the talus slopes cost us no little time and patience and not a few spills before the Fluh Alp was reached.

Fine day after fine day followed until at last even the rocks of the Matterhorn lost their milky appearance and rose black and inviting. The weather was too cold to fulfill the appealing temptation, though given a warmer day the mountain could certainly have been climbed with no great difficulty. Finally we could stand it no longer and set forth to climb the Wellenkuppe which, I had heard, had not been climbed in winter.[1]

Those familiar with the Obergabelhorn-Rothorn chain no doubt recall the discomfort the long trudge from the Trift Hotel up the interminable moraine to the rocks of the Eseltschuggen. They will be pleased to know that in winter the slope between the old and the more recent moraine offers an easy, quick and altogether enjoyable way up this part of the climb.

We arrived at the Eseltschuggen at 8 o'clock and stopped there for a short time to profit by the first warm rays of the sun, and then continued over the almost level snowfield of the Trift glacier toward the Triftjoch before turning southwards up the slopes of the northwest face. These soon became too steep and the snow too hard to continue on skis, so we abandoned the latter and struck off diagonally towards the short snow arête at the foot of the east ridge. The bergschrund presented no difficulty and we soon reached the firm rocks above the snow arête. From here on to the summit the ridge was bone dry, the rock firm and easy but always interesting. I can recall no occasion in summer when rock climbing was more agreeable. A bare 4½ hours after leaving the Trift Hotel we climbed through a break in the cornice onto the summit. Twenty minutes on the hard wind-blown crest and we turned valleywards, and on regaining the skis raced down in swirls of fine powder snow to the hotel.

There is every reason to believe that winter climbing in the Alps at least, will become quite as popular as is climbing in

[1] This seems scarcely possible, but up to the time of writing I have heard of no other winter ascent.

summer. True, the number of practicable itineraries will be reduced. Because of the cold in the shade, northern approaches offer the most difficulty, and the snow-bound rocks of great faces are infinitely harder, though not necessarily objectively more dangerous than in summer. The great ridges will provide the surest and probably the most frequented avenues of approach. Contrary to general opinion, under average winter conditions they are almost if not entirely free from snow, and very rarely are their rocks ice-coated. This state of affairs exists because, above a certain altitude, the temperature does not rise above the freezing point, consequently there is no melting of the snow for refreezing into *verglas*. Secondly, dry snow has little opportunity to accumulate on or near a ridge; it is almost immediately blown off.

The greatest danger confronting the winter climber, the avalanche, is not always to be found on the mountains themselves. It will be met with on the steep slopes rising from the valleys where the air is warmer. For this reason, the approach to the hut is often the most dangerous part of a winter climb and it should be planned and executed with the same caution as the major part of the expedition. No snow-covered slopes at however gentle an angle are entirely free from this danger, and in an effort to alleviate it in every way possible, maps have been published upon which are indicated the most likely places where they may be expected, and these should be obtained as a matter of course by anyone planning a winter climb, no matter how wide his experience or how good his knowledge of snow may be.

Those who harbor a love of the high hills, who revel in the delight of a long ski run and wish to rediscover the Alps for themselves, will not come away disappointed.

The Mountains of New Zealand

KATE GARDINER

LITTLE more than a fortnight's voyage from San Francisco lies New Zealand with its English-speaking population and glorious Southern Alps, a veritable Mecca for the mountaineer with as good and perhaps even more difficult ice and snow climbing than in the European Alps. The highest mountain, Mt. Cook, rises only to a height of 12,349 ft., but the snow line is much lower than in Europe, while the hotels and huts are at a proportionately lower altitude.

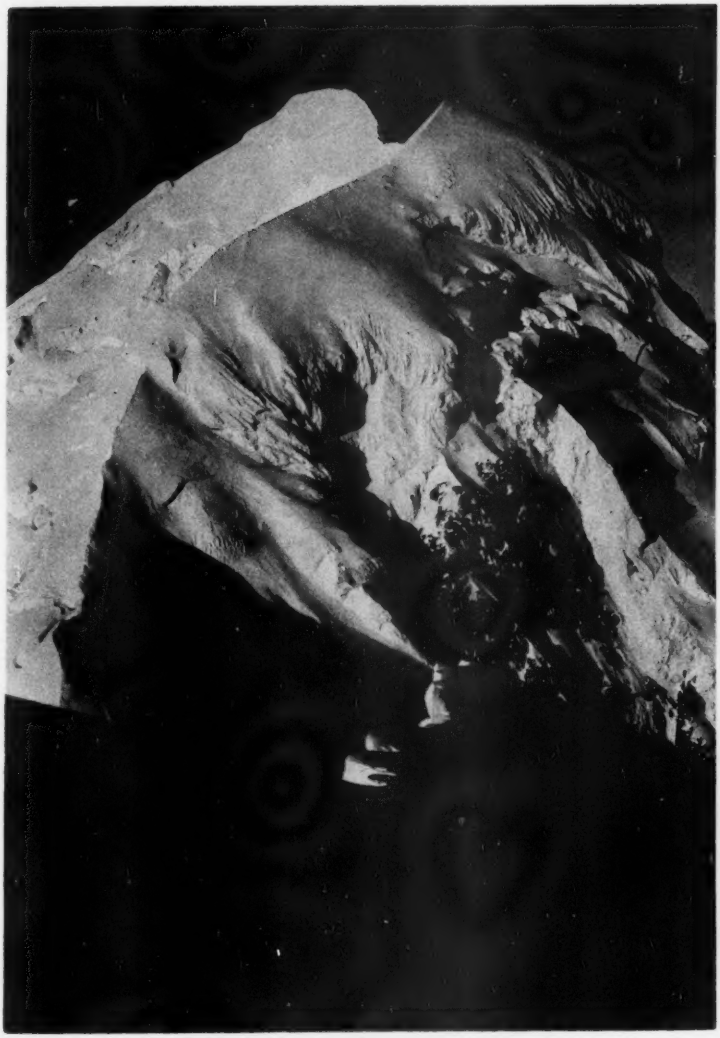
From the high peaks of the main divide which lies near the West Coast the ocean can be seen on either side of the South Island; the great glaciers to the west with their network of crevasses and gleaming seracs coming down almost to sea level through impenetrable bush, the silence of which is only broken by the musical cry of the bell bird and tui and the murmur of stream and waterfall.

High above the other peaks tower Mt. Cook (Aorangi, the Cloud Piercer) and Tasman with their fearsome ice ridges, and a dazzling array of lower mountains stretching away to the north and south; a gleaming chain of snow, rock and ice with the great Tasman glacier winding down gradually to the east for eighteen miles from the foot of Elie de Beaumont to the Mackenzie Plains.

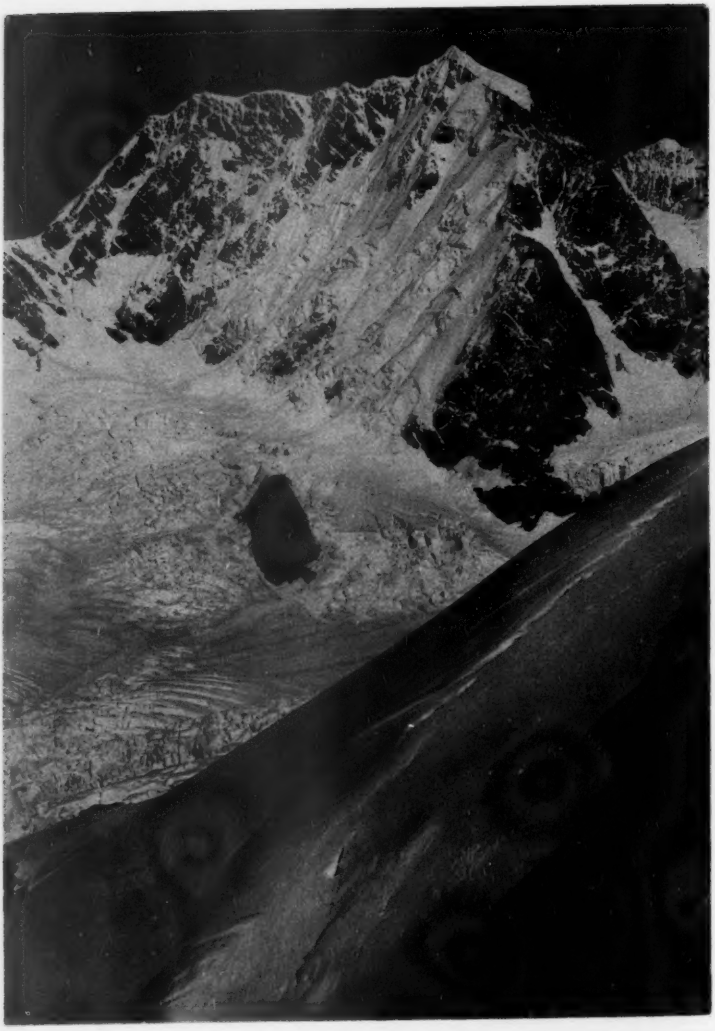
One great advantage in New Zealand is that most of the best climbing is within a small area. The hospitable Hermitage, the premier and oldest mountain resort in the country, is the main climbing center on the eastern side of the range, and there are two comfortable hotels on the West Coast: the Glacier Hotel kept by the two famous pioneer guides, the Graham brothers, at the Franz Josef glacier, and the nice little hostel at Weheka at the foot of the Fox glacier.

These hotels, each of which has an efficient guiding staff, are in control of the numerous excellent huts, the latest addition to which is the new bivouac hut (8,000 ft.) on Pioneer Ridge at the head of the Fox glacier, the highest building in New Zealand.

The huts are well equipped and provisioned so that many of the great peaks such as Mts. Cook, Tasman, Sefton, Malte Brun,



MT. TASMAN FROM LENDENFELD



MT. COOK, TASMAN FACE

Elie de Beaumont, Douglas and Hardinger can be climbed from a comfortable base.

New Zealand has reason to be extremely proud of her mountain guides. They have all the traditional kindness, unselfishness and courage of the old pioneer guides and early climbers allied to a very good knowledge of their own mountains and the weather conditions in the Southern Alps.

The weather is, alas, not always good in this wild mountain region but then one has to remember that these magnificent snow and ice peaks which are so lovely as to almost outrival those of Switzerland would surely cease to exist as such if it were not for the fierce storms which sweep over them from time to time.

There are other attractive ranges to be visited with more difficulty in the southern part of the island with many unclimbed peaks and two specially beautiful mountains to be ascended in the Wanaka and Sounds districts: Mt. Aspiring and Mt. Tutoko.

Mt. Earnshaw, too, near Paradise at the head of Lake Wakatipu is a lovely mountain and the surrounding country with its beech woods, lakes and snow-capped peaks is most beautiful.

The New Zealand Alpine Club which is in control of the De la Beche Hut halfway up the Tasman Glacier will do anything in its power to help overseas climbers as will all the mountain people, so that one feels oneself a really welcome guest.

The white loveliness of the wild flowers in these mountains forms an especially appropriate foreground to the ethereal beauty of the Southern Alps: lilies, gentians, edelweiss and many other fragile mountain blooms grow in profusion on the open slopes below the snow line.

Chamois and Tahr, whose ancestors were brought from Austria and India many years ago, roam the hillsides, and high over the glaciers and lower ranges fly the grey-green keas, those mountain parrots with their flame-colored under-wings and cruel beaks who hover and hop around the huts, amusing us at first with their quaint and friendly ways, but sometimes becoming exasperating when they try to run off with clothing and other belongings.

Their shrill cries of "Kea, Kea" as they slide down the corrugated iron roof are not very conducive to sleep after a long

day's climbing. But they belong to the mountains and one would not be without them.

Mt. Rolleston which can be ascended from Arthur's Pass is a good climb and there are several other nice mountain districts in the northern part of the South Island as well as the lovely and interesting volcanic peaks of the North Island: Mt. Egmont which can be ascended from one of the mountain houses near New Plymouth and Kuapehu and Ngauruhoe from the fine Chateau Hotel at Tongauro National Park.

The season goes by so quickly though that the time soon comes to sail for home once more. One feels loath then to leave the excellent climbing and sorry to say good-bye to the kind New Zealand people who make one feel so at home amongst them that one longs to return times without number to their beautiful country.

Climbs in the Northern Waputiks

(Canadian Rocky Mountains)

H. S. KINGMAN AND J. M. THORINGTON

THE day of the packtrain is passing. At least, it seems so as one watches the working gangs on the road to Bow Lake. Where once the trail wound through the woods there is now a broad avenue, straight as a surveyor's line, stretching northward from the Lake Louise mountains to the Dolomite towers. But the road is still rough enough to make Jim Simpson's car buck as no broncho ever did.

The season of 1933, with its great snow-fall and overcast days, held back climbing in the Rockies, so that the first ascent of the year on Mt. Victoria was not made until July 15th.

We met at Lake Louise station that evening, Kingman and Thorington, and Conrad Kain arrived by train from Golden. Next afternoon found us beyond the road's end, walking through the jackpines to Bow Lake, reaching Simpson's cabins just in time to avoid a pelting storm of hail. We at once went fishing; a double, arching rainbow gleamed above the blue water, and the trout bit madly. Conrad concocted a mulligan that would "revive the dead," while Tommy Frayne and Jack Harris brought the horses along the lake shore in time for supper.

Bow glacier. How different it looks. Not many years ago it seemed to send its icy curtain down into the tree-tops; now it has run up toward its snowfield, leaving bare cliffs and waterfalls below. Deer come to drink at evening—two bucks in velvet, a grey doe and a spotted fawn—and their procession makes a lovely reflection in the brook.

On July 17th, after long search for wandering horses, we packed up, wandered through the flowering meadows of Bow Pass, stopping only to admire that superb panorama of the North Saskatchewan, and drove the horses down the steep slopes of fallen logs and stone-slides to the delta of Peyto Lake. We camped near the glacier. Horses had never been there before, but in a grove of trees we found two rusted cans and a punctured coffee-pot, left on an old winter trap-line.

Next day we walked up the icy highway and made the first ascent of Peyto Peak (9,805 ft.), climbing its southern screes to reach its pent-house tower at the northwest angle, whence there is a fine steep climb of several rope-lengths to the top. We sat and watched the cloud shadows drifting across the Wapta snowfield, and at last glissaded down on the northern side to the frozen surface of Caldron Lake, and so to camp.

Two days of foggy weather held us there. On the first of these we visited the glacier, making a photographic station and marking the ice terminus. The torrent emerges from a translucent cave, into which a team of horses could be driven if one cared for the experiment. The stream from Caldron Lake comes down in serpentine bends, through a little canyon, and joins the main stream across the ice-front.

On July 21st we went up to Caldron Lake, by a good route just north of its stream, and ascended Mt. Mistaya (10,100 ft.) by its eastern snow basin and southern ridge. This took us but five hours, and rope was not required. The peak breaks in a great northern precipice; the day was superb, with views from the Lake Louise mountains to the Columbia icefield, while in the west the Purcells and Selkirks seemed to form a continuous wall from the dim south until they were hidden behind the Freshfield peaks.

Proceeding southward, almost on the watershed, we added another first ascent by taking Trapper Peak (9,790 ft.) from its northeastern angle. The summit is made up of jagged plates of rock, from which one looks down Baker glacier into the depths of the Blaeberry. Its steep eastern face was our homeward route, a continuous glissade of six hundred feet, bringing us into the basin above Peyto glacier.

Settled, perfect weather seemed likely to continue. Next morning, at an early hour, we were on the northern shore of Caldron Lake, on our way to Mt. Barbette (10,080 ft.).[1] This is the beautiful peak one sees from the Saskatchewan trail, lifting its snowy wall above the icefall dropping to Mistaya Lake, and its conquest seemed not altogether easy. We crossed the snowy expanse of Delta glacier to the portal between Mt. Patterson and our objective peak, rounding into the Barbette basin. Occasionally

[1] The last unclimbed 10,000-ft. peak of the main watershed between Kicking Horse and Howse Passes.

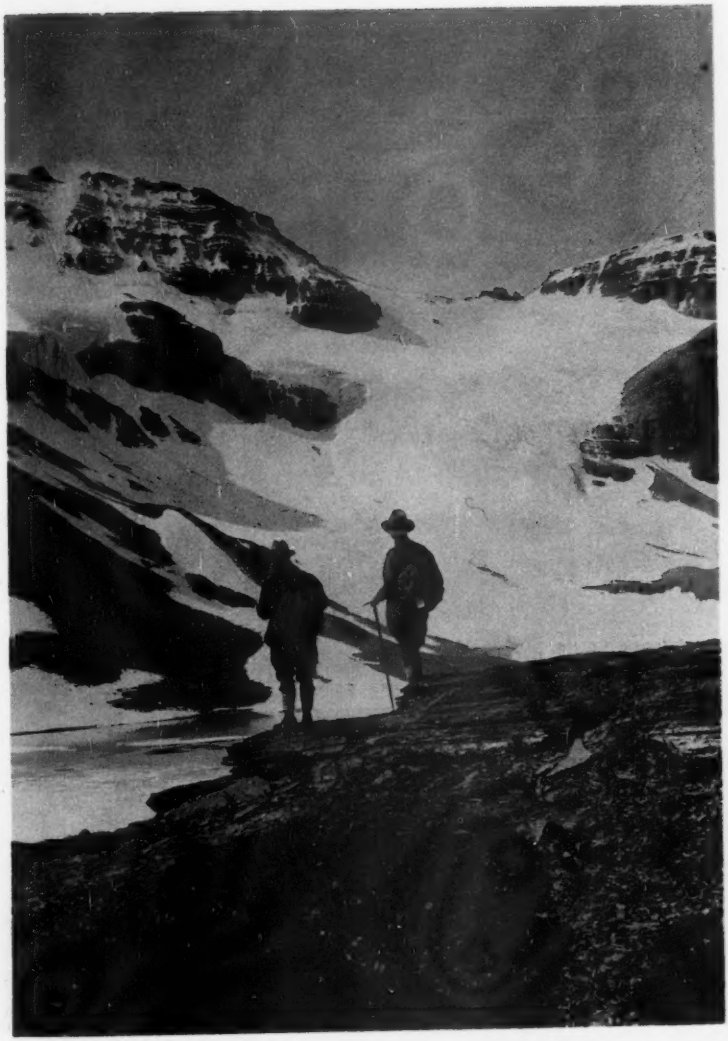


Photo J. M. Thorington

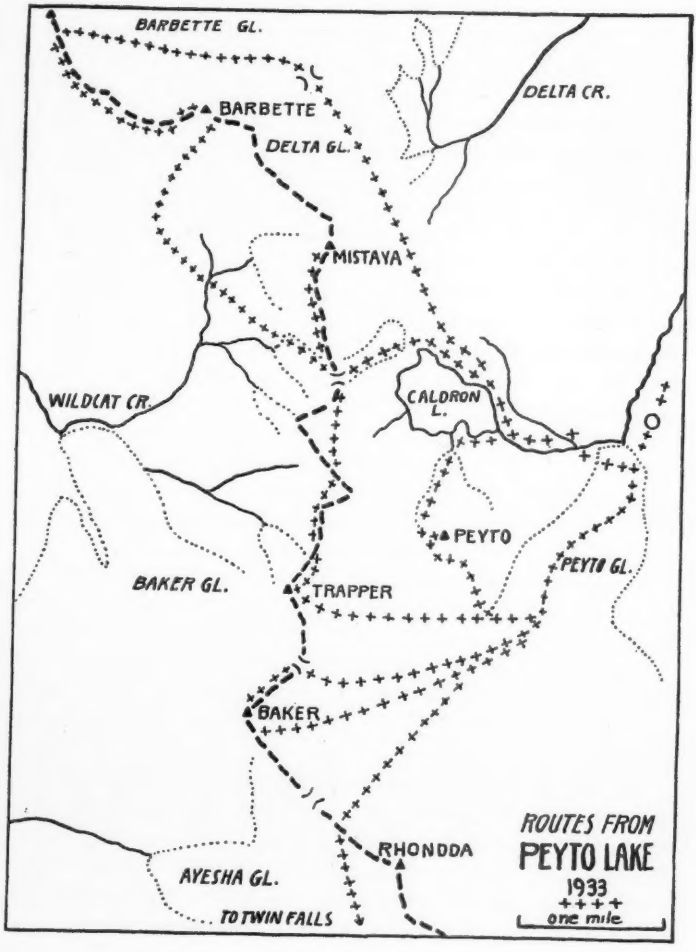
PEYTO PEAK FROM CALDRON LAKE

Photo H. S. Kingman

MT. BARBETTE, NORTHEAST FACE

Photo J. M. Thorington

KAIN AND KINGMAN ON MEADOW BELOW MT. MISTAYA


BARBETTE GL.
DELTA CR.
BARBETTE
DELTA GL.
MISTAYA
WILDCAT CR.
CALDRON L.
PEYTO
PEYTO GL.
BAKER GL.
TRAPPER
BAKER
RHONDDA
AYESHA GL.
TO TWIN FALLS
ROUTES FROM
PEYTO LAKE
1933
one mile

an avalanche would crash down one of the couloirs which seam the northern face of Mt. Barbette, and bulging icefalls stood guard above the northern wall, forcing us to the northwest corner.

We rope and start on a route selected after some discussion. The wall, up to the watershed, is almost a thousand feet high, at an angle which Conrad later estimates to be 50°. For half of the distance we are scrambling on a narrow buttress, above which is snow, with ice beneath, on which every step must be cut. It is the old experience, ever exciting, or standing in anchorage, rope at full length, enlarging the steps and watching fragments of ice whiz by. At last the slope lessens, and we are on the watershed, walking easily toward the summit cornice.

But this was not done in a moment. The Freshfield peaks were shimmering in the sun of late afternoon, their western glaciers reflecting the light. We looked through Howse Pass to the gravel flats and green meadows of Forbes Brook. Mt. Forbes was a broad, dark spike, with the Lyell peaks and Mt. Columbia raising their white spires successively behind, like wing-sets of a stage. Nearer at hand were the lower rock peaks of the watershed beyond Mt. Breaker, all overtopped by the snow-powdered cliffs of Howse Peak. Down Barbette glacier we looked into the dark waters of Mistaya Lake.

We came off our mountain at the southwest angle, outflanking the unbroken precipice facing Mt. Mistaya, and passed the unmapped lakes—frozen now, though ringed with trees—hidden in the basins which drain to the Blaeberry gorge. From the western side we recrossed the watershed at the col south of Mt. Mistaya, raced down to Caldron Lake and reached camp in gathering darkness.

On July 24th we made the second ascent of Mt. Baker (10,451 ft.), ten years from the day on which Ladd, Thorington and Kain crossed Mt. Gordon from Bow Lake to Takakkaw camp, when returning from their expedition to the Columbia icefield.[2] The first ascent of Mt. Baker was made by Wilcox and Aemmer in 1923, and we followed their route, with much step-cutting on the narrow northeast arête. Again we looked across the Blaeberry, to Mt. Mummery with its gorgeous glacier, to the rock-towers on Waitabit Creek, to the array of Selkirk peaks south of Rogers

[2] *A. J.*, 25, p. 178.

Pass, and to the Purcells, with Howser Spire rising above the northern summits.

The end of the trip was approaching. On the morning of July 26th we struck our tent at daylight, and packed our belongings. A little of sadness always clings to a spot where once has been a camp: a few dead bows, bleached poles, ashes and scattered pegs. But we were too busily engaged with the last of the hotcakes to think of this at the time, and were soon off to the glacier.

By sunrise our feet had carried us far up on the snowfield, and in less than four hours we were crossing the Rhondda-Baker col to its steep western side. Passing along the flanks of Ayesha and Collie we circled up to Yoho Peak for lunch, glissaded down to Twin Falls cabin for tea, and walked the trail to Takakkaw camp for late supper.[3] It forms a perfect climax: the Alps from end to end in a single day, the snow firm and a rope seldom needed. Still, it is a long stroll, even for the young fellows we still delude ourselves into being.

[3] This was the first time that a crossing of the watershed was made from North Saskatchewan drainage to Yoho Valley.

Exploration and Mountaineering in Northeast Greenland

N. E. Odell

IT was merely the partial fulfilment of a longstanding desire to visit Greenland and especially its relatively inaccessible eastern side, that gave an unusual quality of joy to our departure last June from Aalesund in Norway. My wife and I had been invited to join Miss Louise Boyd's expedition to Northeast Greenland, with the objects of botany and geology, respectively, as our particular interests. In the *Veslekari* (= Wee Maiden) a sealing sloop of about 180 tons burthen, and fitted up in style and degree of comfort quite unusual for the Arctic, we made our way first of all to the remarkable Island of Jan Mayen, lying some 350 miles northeast of Iceland. This remote island of only about 32 miles in length is dominated by the great dormant volcanic cone of Beerenberg, rising to but little short of 8,000 ft. directly from the sea. Its flanks, once the channels of molten lava streams, are now the runways of great glaciers, and no more remarkable sight of such a character can be seen, where glacier competes with frozen lava over several thousand feet of descent, than on the western side of this beautifully symmetrical mountain. Mr. J. M. Wordie's Cambridge party of 1921 made the first ascent of this unusual peak, and though hampered by mist at the summit they reported a thrilling impression made by the scene from the crater rim, whence one looked abruptly into a glacier-filled bowl of vast proportions. Through a remarkable breach in the northern rim pours the Weyprecht glacier in a series of wonderful icefalls to the sea 7,500 ft. below. At least two of our party, with the mountain fever strong upon us after four days' imprisonment in a rolling sloop were anxious to see this sight, and the writer had designs on a collection of volcanic rocks from the upper parts of the mountain. From a mist-enveloped camp at about 2,600 ft., Walter Wood and the writer groped our way up the great glacier of the southwest side, and save for a sudden clearing at 6,000 ft. as we emerged from a complicated maze of crevasses, enabling us to take a fleeting glance at the route ahead, we saw nothing but our immediate surroundings of ice, snow, and occasional rock outcrop.

TEUFELSCHLOSS FROM N. E.
FRANZ JOSEF FJORD

GOG AND MAGOG, WITH TONGUE OF LOWER GREGORY GLACIER.
N. E. GREENLAND.

NATHORST PEAK FROM N. AT 7,000 FT. N. E. GREENLAND

PETERMANN PEAK AND UPPER GREGORY GLACIER
FROM HEAD OF NATHORST GLACIER

The much hoped-for view into the ice-filled crater was denied us and, amidst general obscurity, as we were about to retreat, owing to driving hail, a startlingly close lightning flash and simultaneous crash of thunder drove us off the exposed summit. It has fallen to my lot to descend mountains at various speeds on ski and on foot, but rarely so precipitately as on this occasion, for running and glissading by steep short cuts we reached our camp in two hours, a distance that had consumed seven hours on the ascent. We continued to the shore, and following a brief visit to the observation station of the Austrian Polar Year Party, where our ascent was duly and mutually proclaimed through the medium of most excellent Tyrolean cognac, we got aboard the *Veslekari* before midnight.

The great East Greenland pack-ice belt, which some seasons is eighty or more miles in width and difficult to penetrate, gave no trouble last summer, and we reached the historic headland Hold-with-Hope, in latitude 73°, by July 13th. But land-fast ice hugged the entrance to Franz Josef Fjord, which was to be our route to operations along the border of the continental ice-cap. However, by the 23rd the coastal ice had broken up sufficiently for the *Veslekari* to make her way up this great and spectacular fjord, which wends its course between mountain walls for one hundred miles inland to the foot of glaciers descending directly from the Inland Ice. A stop was made for some local investigations at a remarkable mountain named "Teufelschloss" (or the Devil's Castle), which rises abruptly in brightly banded tiers of cliff to a height of 4,300 ft. above the waters of the fjord. Two of us, Wood and myself, made a first ascent of this striking mountain, not merely for the benefit of what promised to be at the outset a first-class, if not impossible climb, but also to glean geological information. The difficulties were less than expected, the information gained of more importance, and the outlook from the top on to the ice-flecked, opalescent waters of the great fjord, pent in as far as the eye could see by multi-colored mountain walls, an unbelievable and enchanting sight.

On our return the *Veslekari* was all excitement to be off in answer to a wireless call for help from the Norwegian Government ship which was ashore in a fjord some one hundred miles to the southward. All that night we proceeded at about nine knots, which was well in excess of our normal full speed, only to hear

by the morning that the stranded vessel had meanwhile been refloated.

Our next objective was Ice Fjord, whose narrow winding cañon is notoriously inaccessible on account of blockage by ice-bergs, which are calved from two immense glaciers that drain into its head from the Inland Ice-cap. Last summer conditions were so favorable that we could sail to the very head, and thence two of us made a reconnaissance in the course of two or three hard days into the portion of the complicated mountain country which lies along the border of the ice-cap. From a high snow summit we could see Petermann Peak, the highest point in this part of Greenland, many miles to the southward. But what was included in this view, as a thing of far greater interest, were two distant lakes lying in ice-free country between us and Petermann Peak. These could be none other than the "Mystery Lakes," seen by Wordie's Cambridge party of 1929, during the first and only ascent of Petermann Peak.

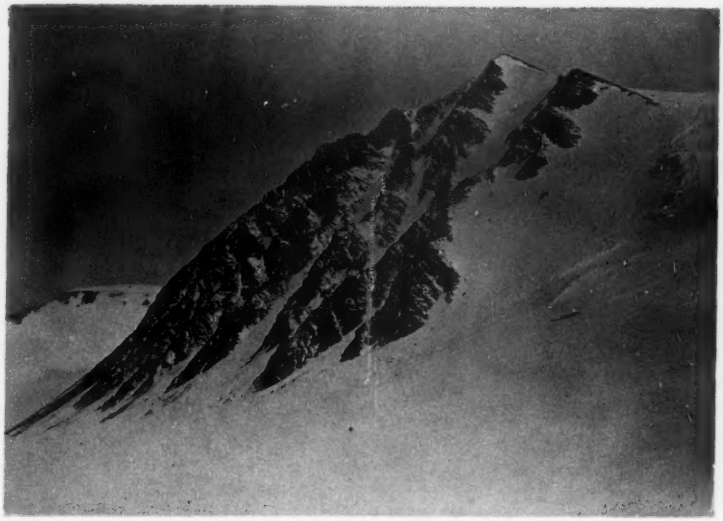
Our immediate interest now lay in the further unexplored country in the vicinity of these lakes, which had originally been set down as one of the main objectives of the expedition. The direct route from the head of Ice Fjord was barred by the difficulty and danger of effecting a landing on the great ice-cliffs of the Jätte glacier, which periodically discharged masses of ice weighing thousands of tons into the waters of the fjord, so active and aggressive are these swollen ice-streams which descend direct from the Inland Ice-cap. Access, therefore, seemed to be more promising from the head of the main Franz Josef Fjord, and August 5th saw us making our way round by what must be one of the most impressively spectacular waterways in the world. At one point the great cliffs of Attestupan fall 5,900 ft. sheer into the fjord, and glaciers plunge down to the water's edge from nearly similar elevations. Into the head of the Franz Josef Fjord flows the great Nordenskiöld glacier, whose wont it is to disgorge such a mass of bergs and ice-débris that some seasons no ship can approach within four or five miles of its front. In this respect conditions last summer were more favorable, for we were able to make a landing on the north side within two miles of the Nordenskiöld glacier front. Our guess that the narrow valley running inland thence might lead us to the neighborhood of the Mystery Lakes proved correct, and an exciting reconnaissance revealed a

remarkable approach through a cañon-like and desert valley, strewn at intervals with the antlers of reindeer, which disappeared from Northeast Greenland some sixty years ago. The only inhabitants were the Arctic hare and an occasional fox, but the spoor of wolves were also seen, though these animals also are supposed to have vacated the country. Glaciers at intervals plunged down the steep walls of the valley, and in its upper wider reaches a modicum of grass and flowers were to be found, but the dwarf Arctic willow predominated, and near one of our camps even blueberries supplied a surprising dish of dessert. The lakes themselves, if not mysterious, turned out to be of considerable interest. An upper one drained into a lower, which was pent up by the wall of the Jätte glacier at a point many miles above its outflow into Ice Fjord. It was evident that this latter lake had had a somewhat varied life history, and that once it had stood at a much higher level. When that was the case, probably within the last two years, huge masses of ice, broken off the Jätte glacier, had floated out on its waters and become stranded on the hillsides two hundred feet above the present water level; one of these was the size of a house and about sixty feet high. Movements of the Jätte glacier must periodically allow a certain proportion of the water to drain away, while at other times a much greater volume is dammed up.

From a camp in the vicinity the mountains and glaciers north of Petermann Peak were explored and a photographic and geological survey carried out. Several fine summits were ascended, and one which rose 8,700 ft. and occupied a prominent position overlooking the Inland Ice, afforded my wife and myself an excellent rock climb of over 2,000 ft. in its upper parts and an unbelievably impressive panorama from its isolated and chilly summit. This peak is of some local significance and interest perhaps, since it seems to be identifiable with that seen from afar by the Cambridge reconnaissance party of 1926 and named Gog, its companion Magog standing close by.

Another expedition of great variety and interest was the ascent of Nathorst Peak, 7,800 ft., by Walter Wood and myself, and the nineteen hours involved in its accomplishment, together with geological collecting and other observations, was as strenuous a day as the writer can recall.

The region is without doubt one of singular if austere charm, with scenery of the most spectacular character, and a summer expedition in a good ice season on the coasts, such as last year, need have few troubles and little anxiety, provided the skipper knows his job and moves warily in these uncharted waters. One brief lapse and disaster may follow, as might have befallen the *Veslekari* when she ran aground on a delta at the head of Geolog Fjord at high spring tide. The position was retrieved, however, after failure with kedge anchors, by making fast to a handy ice-floe and towing ourselves off with our own winch. If this pretty operation had failed, we might have had to spend a dark and hungry winter in the Arctic, since other ships had long since left the coast.



PEAK AT HEAD OF ICE FJORD. ASCENDED BY ODELL AND WOOD
BY ROCK RIDGE FORMING LEFT PROFILE

THE JÄTTE GLACIER

Photo E. R. Gibson

WEST FACE OF SOUTHERN RAMPARTS, SHOWING THE ROUTE

Photo E. R. Gibson

LOOKING SOUTH FROM THE TOP OF DUNGEON,—OUBLIETTE AND PARAGON. IRREGULAR BAND OF SNOW IN THE LOWER PART OF THE PICTURE MARKS THE ROUTE ALONG THE LEDGE

The First Ascent of Dungeon

EDWARD L. WOOLF

THE ascent of Dungeon Peak marks the close of the pioneer work in the Tonquin. All the peaks have been climbed and explorers, it seems, have visited every nook in the valley. Dungeon was the last unclaimed stronghold and with its fall the area has taken on a more sedate aspect. It is with regret that I observe this change for I like to think of the Ramparts as they appeared to me on my first view from the top of Maccarib Pass. Not all the emotions were due to the magnificent display of peaks nor to the beautiful contrast formed by the steep cliffs rising out of the rolling meadow. The two unclimbed peaks, Oubliette and Dungeon, added a touch of mystery and adventure to the view.

The southern end of the Ramparts ridge, with the peaks Redoubt, Dungeon, Oubliette and Paragon standing in that order from north to south, rises in a high wall above the valley on each side. On the outer or eastern face this ridge is particularly steep. To the mountaineer it has proved an effective barrier against attack on the peaks from that direction. The west side of the ridge is reached by a climb over one of the high passes or by a long journey around the north end of the Ramparts. Those who have made the journey have found the west cliff hardly less impressive. By reason of its secure position in the center of the ridge Dungeon remained unmolested up to the time this story begins.

The initial attack was launched in 1931 when a party including Hans Fuhrer, Walter Streng, Captain E. R. Gibson and the writer made an unsuccessful attempt to scale the west slope of the mountain. We had been on a trip arranged by the Edmonton Section of the Alpine Club of Canada and were in camp at Geikie Meadows with two days available for a try at Dungeon. Previously we had inspected the mountain from several points of vantage and had decided upon a route up the west side of Para Pass and along a supposed ledge across the slopes of Paragon and Oubliette. The following night we camped on the Bennington glacier at the foot of Oubliette. From here at the base of the cliff the outlook was very different. The slopes of Paragon

and Oubliette looked impassable, as the band of snow which marked the ledge was hidden from view. In fact, the whole course we had mapped out seemed entirely too precarious. Instead, a more direct route up the west cliff to the Dungeon-Oubliette col was chosen. It proved a tremendous task, thirteen hours of strenuous work which finally brought us to the top of the ridge in the broad col at the base of Dungeon Peak. Two square towers standing on the ridge blocked all effort to reach the upper slope of Dungeon. With the approach of darkness our thoughts centered on a safe means of retreat, which we found, most surprisingly, in the route previously discarded.

That trip along the ledge across the slopes of Oubliette and Paragon was a most fascinating experience as we circled around steep cliffs and into deep couloirs, anticipating a rebuff at each turn in the ledge. There were patches which at first sight in the dull evening light seemed impassable, but their difficulties mitigated as we approached for closer inspection. By seven o'clock we were standing at the top of Para Pass in view of the Memorial Hut in Penstock Valley below, defeated but not entirely without reward for we had found a feasible route to reach the upper slopes of Dungeon without too great a sacrifice of time and energy.

In August, 1933, Cyril Wates again arranged an exploring trip to the Tonquin for the Edmonton mountaineers. Captain E. R. Gibson and I were on hand, chiefly to have another try at Dungeon. The third member of our rope was Robin Hind of Calgary, whose congenial personality and general ability made him a very fortunate addition to the party.

Our plan was to make a traverse of the mountain, ascending from the southwest and descending the north ridge over the shoulder of Redoubt to Lookout Pass and down to the Warden's cabin in the meadows. This would be a long trip, taking in the entire length of the southern Rampart ridge. There was a question as to whether we could complete it in one day or whether it would be necessary to establish a camp at some point on the ridge. The latter course had decidedly no appeal for it involved the laborious task of packing supplies up two thousand feet of ice slope on the east side of Para Pass. If we were to make a one-day trip of it the route would have to be planned carefully to avoid all possible delays.

Two days before the try at Dungeon we had an opportunity to climb Oubliette, which lies not far to the south. It was a superb rock climb, one of the best in the area, and well worth the effort. Also it served ideally as a scouting trip, for we not only tried out most of the route from the Memorial Hut to the Dungeon-Oubliette col, but were in a perfect position to map out the assault on the Dungeon summit tower. With our glasses we searched out a likely course in a shallow couloir running up the center of the west face. Some difficulty would be experienced in reaching this couloir and two lines of attack were possible. The first made use of a ledge which ran across the west face a short distance above the col. If that failed, we planned to try a similar ledge a few hundred feet lower down. Although longer, the second course had more promise of success.

On the morning of August 13th the party, Gibson, Hind and I, set out at 5.40 from the Memorial Hut for a try at the traverse of Dungeon. My Canadian companions had generously granted me the honor of leading. The sky was clear and a pink glow on the surrounding peaks presaged another perfect day. I might explain here that for the past week the weather had been ideal, clear and warm with hardly a cloud in the sky. Fresh snow which was visible a week before was now gone and the winter's drifts on the upper ledges were reduced to a minimum.

We made rapid progress up Para Pass and along the ledge on the west slopes of Paragon and Oubliette for our packs were light and the route was still fresh in our minds from the trip two days before. By ten o'clock we reached the point where the route leaves the west face and follows a narrow ledge across the north cliff of Oubliette. This was the only part of the route of ascent which had not been viewed while making the Oubliette climb, and curiously enough it was here that the first trouble was lurking.

There had been no serious difficulty at this point in 1931, but since then a rock slide had carried away part of the ledge, which now ended at a deep hole not more than one hundred feet from our immediate objective—the Dungeon-Oubliette col. Several yards from the end of the ledge a square-shaped buttress jutted out from the north wall of Oubliette and extended upward thirty or forty feet. The corner where the buttress met the main cliff offered a possible means of ascent, very much exposed and somewhat dubious at the upper end. To search for another way around

would consume hours of valuable time. Obviously the thing to do was to have a try at the route ahead. Without doubt the dark hole below and the gloom of the north wall magnified the difficulties for the route went well enough with the aid of some rock splinters left wedged in the cracks by the rock slide, and a shallow niche which was climbed chimney fashion. From the top of the buttress a short descent on the other side brought us to the Dungeon-Oubliette col. That short passage, requiring an hour, was the first of a series of setbacks to schedule which were to be a source of worry before the day was over.

At the northern end the ridge of the col rises in two tower-like blocks to meet the cliffs of Dungeon. Just above is a broad ledge, the upper of the two routes we had mapped out to the couloir in the center of the west face. Unquestionably this ledge was the shortest way to the couloir. The real difficulty, however, lay in the cliffs leading to it. In 1931 this same cliff had turned us back but we hoped that a more thorough search around the base of the towers and along the cliffs on the east side of the ridge would reveal a point of weakness. By noon we had found nothing in the way of a feasible route to the ledge above and decided to abandon the search in favor of the longer course lower down on the west face.

The broken cliffs on the west face offered little resistance to our descent to the ledge two hundred feet below. Farther along we reached a point which had caused us some concern when viewing the route from Oubliette and our fears were not without reason. At a sharp bulge in the cliff the ledge narrowed down to nothing more than a crack. By this time we were in the proper frame of mind for such a passage. There was no thought of turning around to look for an easier route. That had been tried for the last hour or more without much success. The situation called for a piton, which when driven into a crack higher up and farther back in the cliff gave the necessary security and moral support to encourage a try. It was blind climbing for we could not see around the bump. Gibson's long arms searched out a few good handholds which enabled us to edge our way around to the ledge beyond.

This brought us to the base of the cliff which had been selected as a possible means of ascent. It was a miserable looking pitch, not at all inviting. The rock was badly shattered by the action of

frost, and the cliff was plastered with a scale-like formation which seemed on the point of falling off. The ascent was a slow, tedious task, feeling and testing each slab for a secure handhold. Huge pieces came down at the slightest touch so that a diagonal course was the safest way to clear the route without endangering myself or the rope. At the top of the cliff there was another problem, finding a way through a mass of broken slabs projecting out over the edge.

On the ledge above we stopped for a breathing spell and a bite to eat. This was the ledge we had tried to reach before by a direct route from the col. The progress of the last four hours was far from encouraging. We had advanced probably five hundred yards along the ridge but had gained not more than two hundred feet in altitude.

The couloir which was the key to our route up the west slope was now directly above. It was a ragged cleft with brittle walls, a series of narrow gullies widening into deeper cavities of decay. The ascent was unimpressive but required constant vigilance against loose stones. Farther up we arrived at a steeply inclined ledge which had been singled out during the scouting as a likely prospect. It did not fail us for it led us out of an uncomfortable situation in the couloir to firmer rock on the west face which eventually brought us to the base of the summit tower.

From here on the west face, the summit pinnacle was a forlorn spectacle, a peak crumbling into decay. We made our way up to the ridge between two towers, not daring to loosen a stone for fear of starting a general rock slide. The fragile crest of the ridge seemed scarcely able to sustain our weight as we climbed to the summit, a broken mass on the right. It was a fitting culmination to the route we had followed. The time was recorded as 3.20.

There was a real joy in stretching out on the broken mass after having pushed on steadily for almost ten hours. The exacting nature of the climbing on the loose rock had been a strain both mentally and physically. We were glad to sit in quiet and take our just reward in the magnificent view. Presently we were aware of a brisk wind from the northwest. Heavy banks of mist poured over the top of Geikie and raced up Bennington glacier. Soon we were in the midst of a pelting hail storm. Fortunately it did not last long but it was a warning to be on the move.

Our intention had been to make a traverse of the mountain but it was four o'clock now, a rather late hour to start a new route. However, none of us had any desire to return by the route of ascent, so we decided to continue with our original plan in hopes of finding better conditions on the north ridge. In this we were not to be disappointed for the rock was firmer and less broken up. Our descent progressed without difficulty over two or three small peaks until we reached the last pinnacle at the Dungeon-Redoubt col. At this point a short steep couloir offered a path of least resistance to a broad ledge on the west face. Further progress down the west face was impossible as steep cliffs lay below. A short distance to the north along the ledge we found a tremendous couloir running down the entire length of the west face. It was cut deep into the mountain with steeply inclined sides converging into a narrow trough which was filled with snow except near the top, where the walls were almost vertical and coated with ice.

We stood for a moment at the top of this couloir considering the next move. There were at least 2,000 ft. of cliff to descend; the weather was still threatening and the time 5.30. It would require steady progress to get us off the cliffs before dark. Our original plan to work out a route over the intricate mass of shattered cliffs on the west shoulder of Redoubt appeared possible but it would be long, slow work. The 1,500 ft. of snow slope in the lower end of the couloir seemed to be the answer. Could we reach it by descending along the upper south wall of the couloir and complete the task before darkness set in? The decision was yes. It may not have been a wise one considering the conditions but I doubt if any other choice could have given as good results.

Wet, decayed rock, narrow ledges, mud and moss were our lot on the south wall. After a tortuous descent of two or three hundred feet we were willing to admit our mistake. The ice in the couloir was a possible way out for we were now below the steepest part of the sluice. A short, steep cliff which separated us from it loomed up as an awkward problem. Roping down was out of the question for the decayed rock was unfit for a piton or a sling. Slippery ledges above and ice below contributed to the difficulties. Actual contact with them proved that they were

more psychological than real. A few tense moments brought the party to safety in the couloir below.

Our change to the ice had not been a false move. Along the north wall a ridge of rough ice made a safe avenue of descent while the center was smooth ice, torrents of rushing water, and slush. Soon the snow was reached, at first thin on hard ice, then deepening to a secure footing. As the surface became firmer the tension eased and the pace quickened. The snow in the lower couloir proved all we had expected of it, a safe rapid means of descent down the remaining fifteen hundred feet of slope. It was eight o'clock when the party reached the bottom of the couloir.

We were off the cliffs and in reality the climb was over. However, there was still a long journey before us to shelter at the Warden's cabin, with possibilities of trouble until we were over Lookout Pass. We would push on in the remaining hour of daylight until darkness made further progress unsafe.

A monotonous trudge over scree and broken rock brought us breathless to the top of Lookout Pass. Then followed a furious session of step kicking down a long snow couloir, which offered a safe path and brought us to the meadows as darkness fell. By midnight we had completed the remaining three miles to the Warden's cabin, glad to curl up in blankets on the floor after more than eighteen hours on the route.

In spite of treacherous rock and four long hours of drudgery at the end, our trip over Dungeon was a worthwhile adventure. There was a large variety of difficulties which called for skill and ingenuity and left little room for dull moments. Future parties might find a more attractive route to the summit by way of the northwest couloir which we used on the descent. The upper part of the couloir could be avoided, possibly, by taking to the west slope of the mountain at the top of the snow. Such a route would be quite free from the dangers of climbing on loose rock.

New Routes on Familiar Canadian Peaks

GEORGIA ENGELHARD

PRIOR to 1933 the traverse of Mt. Victoria had been made three times,[1] in each case starting from Lake Louise, climbing North Peak, thence following the ridge over Main Peak to Abbot Pass. This route is long, requiring from seventeen to twenty-four hours, the minimum time from North to Main Peak being seven hours.

Ernest Feuz and I felt that could the traverse be made in the reverse direction it would be less strenuous, since a good start could be made from Abbot Pass, enabling us to reach the difficult part of the ridge in fresh condition, avoiding the six hours required from Lake Louise to the North Peak. There was, however, considerable doubt as to whether we should succeed, as on one of the many pinnacles of the ridge it had been necessary to rope off, and Rudolph Aemmer, guide of previous parties, had seen no way of climbing down without artificial aid. However, we decided it was worth while to attempt—the very doubt being in itself a challenge.

We left for Abbot Pass on the afternoon of August 14th. The following morning was gorgeous: Cool, clear and windstill. Starting from the hut up the familiar ridge at 5.30 A.M., the snow was in excellent condition, enabling us to reach the Main Peak in one hour and fifty-five minutes. Ahead of us stretched the arête, a bristling chain of gendarmes perched on a knife-like ridge, dropping almost perpendicularly on the O'Hara side. It was an imposing sight.

In actuality it was less formidable than it appeared. At 7.30 A.M. we started down to the first gap over loose shale and small boulders lying on a steep slope, a pitch which required caution to negotiate. Reaching the first gendarme we climbed it easily and descended again to the ridge. We climbed practically all of the gendarmes, making only two traverses on the Lake Louise side of the ridge, a procedure which required care as the rock was extremely loose and shaly. On the whole, the rock on the gen-

[1] 1909, G. W. Culver, *E. Feuz, Jr., R. Aemmer;* 1918, V. A. Fynn, *R. Aemmer;* 1931, E. Cromwell, *R. Aemmer.*

darmes was fairly solid. The ridge itself was less rotten than we had expected, and though narrow in places, never actually a knife-edge. The hand- and foot-holds were firm and fairly large and, if one took time in crossing the loose rock on the ridge itself, footing was not bad. We were able to keep up a fairly steady pace and found the going interesting and enjoyable. The south side of the gendarmes was vertical, the angle on the north being much less abrupt, a fact much in our favor, as the preceding parties had had to climb *down* the steep side—more difficult and slower procedure than to climb up it as we were doing.

After about an hour of continual steady climbing we reached the roping-off place. Above us rose the pinnacle, and we could see the rope hanging from the sharp nose on the south side. But to our astonishment we encountered no difficulty whatever in scaling the southeast face of the gendarme by way of good, if narrow ledges. Needless to say, we were immensely pleased, as our success was now assured. Upon reaching the Middle Peak at 9.30, we stopped for second breakfast, which by this time was most welcome.

No difficulty was encountered on the remainder of the traverse, affording some excellent bits of climbing on sharp ridges and up sheer pitches. The split[2] is in no way comparable to the one on Hungabee, nor are there any real technical difficulties. The last bit, leading onto North Peak, is easy, but is preceded by a nice scramble up a sharp needle, where we embraced a vertical ridge for about thirty feet. North Peak was reached at 10.30 A.M., exactly three hours after leaving Main Peak, thereby cutting down previous time records by four hours.

The day was so fine and the view so magnificent that we stayed on North Peak till noon, enjoying the sight of old friends such as Sir Donald, Columbia and Assiniboine. The descent to the tea house at the Plain of Six Glaciers was made in one hour and fifty minutes—the snow being in excellent condition, and permitting several enjoyable glissades on the Upper Victoria glacier. The total time for actual climbing from the Pass to the Plain was six hours, twenty minutes. We were out a total time of eight and a half hours.

[2] See *C. A. J.*, xxi, p. 21.

One may characterize this traverse as an interesting one, but with no major difficulties, though not for the novice. It requires a climber of average ability and stamina and we agree with Mr. Cromwell that due to the extremely broken-up nature of the ridge, two on the rope is preferable to three.

Our next venture, the traverse of Mt. Lefroy, proved less successful. We left the Plain of Six Glaciers at 5.00 A.M. on August 16th, crossed the lower glacier to the cliffs on the north side of Lefroy and scrambled up by way of the ladders, a highly disagreeable undertaking as torrents of ice water from the melting snow on the plateau above poured down the clefts in which the ladders are placed, and having neglected to take a raincoat, I was drenched to the skin when we crawled out onto the big boulders above. It was still early in the morning, the rising sun just reddening the Victoria glacier across the Pass. The air was distinctly crisp, and as my soaked clothing was icy I was not averse to the fast pace that Ernest set as we scrambled up several extremely rotten cliff-bands to the north arête which we followed to the summit. This arête is easy, consisting of broad, shaly ledges with here and there a traverse across a steep ice slope, requiring step-cutting, on the Abbot Pass side. We did not use a rope, the summit being reached in five hours. Here we paused for a bite to eat and a chance to examine the arête ahead of us. We intended to traverse it to Glacier Peak, descending to Lake O'Hara by way of the col between Glacier Peak and Mt. Ringrose. At close range the ridge had a formidable appearance, bristling with gendarmes, and cut up by them not only longitudinally but also laterally, with a tremendous drop-off of almost 5,000 ft. on either side.

We put on the rope and started off, traversing the first three pinnacles south of the summit without difficulty. Then we were confronted by a drop-off of some 125 ft. above a narrow ridge, leading to the main arête on which rose many fantastic, sharp needles. The Victoria ridge was child's play by comparison. We found it necessary to traverse along the Paradise Valley face on loose scree lying at a precarious angle. We hugged the wall to our right as much as possible, but found it of little use, as everything we touched broke off. The extreme rottenness of the rock made the going disagreeable, and once I was horrified, when, stepping on what appeared to be a solid boulder, it shot down the declivity, starting a rock-slide onto Ernest, who was leading down

ahead of me. Fortunately the slide did not materialize into a serious one, but Ernest received a badly cut hand, and we were made keenly aware of the seriousness of our position. It became necessary to climb up a bit on the east wall in order to gain more solid footing and an adequate anchor-place. From here I climbed down about 30 ft. to the little saddle in the ridge, but found it impossible to proceed further. On both sides steep couloirs filled with loose stones, ready to slide at a moment's notice, fell away into the valleys. The ridge ahead, knife-like and jagged, was so rotten that it tottered and broke as soon as one so much as touched it, and the tiny ledges on its sides were loaded with scree. About 100 yards ahead the ridge overhung on the north side, with no obvious way of getting around it. I shouted to Ernest that I saw no way of going on. He climbed down to me, and after a careful examination of the ridge we decided that it was impossible to make the traverse. Were the rock solid it would be possible, though none too easy, but considering its extreme friability we considered it almost suicidal to proceed further, as there were neither safe anchor nor roping-off places visible, and the whole arête showed too great a willingness to topple over. So after two hours of very disheartening labor we made our way back to the main summit and thence down the ordinary route to Abbot Pass and Lake O'Hara (eleven hours total time). We built a cairn on the nose above the drop-off, which I believe is the furthest point yet reached on the south arête.

On August 18th we climbed Mt. Hungabee by Val Fynn's route (third ascent by this route), proceeding via the broad ledges on the south side of the snow couloir leading to Ringrose col, crossing the couloir to the north side near the top, thence continuing by the north arête. In one place it was necessary for Ernest to stand on my shoulders in order to get up onto a smooth, holdless slab above his reach. We reached the place where the usual route joins the north arête in five hours of practically continuous climbing, and made short work of the nice pitch along the summit ridge, by far the best piece of climbing on the north arête. (Total time, five and a half hours.)

This route has little to recommend it, being longer than the usual route, the rock on the lower part of the north arête disagreeably rotten, with climbing largely on broken cliff-faces. Descent was made by the usual route, which is pleasantly easy without being dull.

PROCEEDINGS OF THE CLUB

SECRETARY'S ANNUAL REPORT

During the year we have lost our distinguished Honorary Member, Prince Luigi Amedeo di Savoia, Duke of the Abruzzi, and two Active Members, Mrs. Laurie R. Frazeur and Mr. Henry F. Montagnier. Six Active Members have resigned and two have been dropped. Nineteen new Active Members have been elected, making the total membership at the end of the year 231, composed of 11 Honorary and 221 Active Members, one, Dr. Workman, being carried as both Active and Honorary. This is a net gain of eight and is most satisfactory considering the times.

Four meetings of the Board of Directors have been held during the year on January 21st, April 8th, October 7th and December 9th, all in New York City; the December meeting lacking a quorum was considered informal, its actions to be confirmed at the next meeting.

At the December Council meeting it was voted to authorize the Treasurer, Mr. Fisher, to negotiate a lease for two additional rooms adjacent to our present rooms and to give up our present north room at 140 East 46th Street, New York. This has been done, for a period of two years from January 1st, 1934, at a yearly rental of $1,020, as against $870, which we paid for the two rooms in 1933. We gain by the change about 30 percent floor space, and somewhat more in wall space. This change was made principally to accommodate the books which are being received from the widow of our late member, Mr. Henry F. Montagnier.

The fifth issue of the JOURNAL appeared in June, fully up to the standard set by previous numbers.

Four informal meetings and a special dinner have been held during the year. On March 9th, at Mr. S. Prescott Fay's house in Boston, twenty-eight members and several guests heard Mr. Terris Moore's account of the ascent of Minya Konka. On March 10th, in New York, at the Rotisserie Parisienne thirty-six members and guests heard Mr. Fritz Wiessner's account of the

more technical aspects of the attempt on Nanga Parbat. On May 5th at a special dinner held at Sherry's in New York over 100 members and guests gathered to hear Mr. Moore's splendidly illustrated account of the Minya Konka climb, the talk being followed by interesting questions to the speaker and answers. On December 9th, in New York, in the Rotisserie Parisienne about sixty dined together and heard three speakers afterward, Mr. Edward L. Woolf on the "First Ascent of Dungeon in the Ramparts," Dr. Nichols on "Early Days in the Club," and Prof. Dean Peabody on "Rock Climbs in New England," finely illustrated. On December 10th at the home of Mr. Bestor Robinson in Oakland, California, seventeen of the twenty-five West Coast members and eight guests gathered for an enjoyable evening with several short mountaineering talks. Thus, including the Annual Dinner there were six meetings during the year with a total attendance of about 360.

Our members continued fairly active in the fields of climbing and exploration, their activities ranging in Europe from Greenland to the Alps, in North America from Alaska to the American and Canadian mountains, in New Guinea, and elsewhere.

Several books by our members have been published during the year including Miss Knowlton's "Naked Mountain," an account of the Nanga Parbat expedition, and Dr. Thorington's "Mt. Blanc Sideshow, The Life and Times of Albert Smith."

All in all the Club continues in a healthy condition and it is hoped that all members will make every effort to retain their membership during these difficult times.

ANNUAL MEETING

The 31st Annual Meeting of the Club was held at the Appalachian Mountain Club, Boston, on January 13th, 1934, at 2 P.M. President Schwab presided and there were present twenty-five members when the meeting was called to order and thirty-five later. The minutes of the last annual meeting, the Secretary's report, and the Treasurer's report were read, approved and ordered filed.

The Treasurer, Mr. Fisher, reported income of $1,786.99 of which $463.24 was interest and $1,307.00 from dues, and $16.25

miscellaneous. Expenses were $1,864.93, made up of rent, light and care of rooms $951.55, stationery and miscellaneous $254.29, library $55.88 and charges Montagnier books $94.95, JOURNAL net cost $488.11 (the gross cost was $646.77 less contributions $93.18 and sales $65.48), net cost dinners and suppers $20.15, leaving a deficit for the year of $77.94.

The assets of the Club at the end of the year totalled $17,219.53 of which $6,832.48 was cash in banks and the remainder invested.

The Librarian, Miss Buck, reported the addition of sixty-one books during the year, bringing the total of bound volumes to 1,358. Most of the books as well as lantern slides and two ice-axes were received under the will of our late member and former President Henry G. Bryant. Books given by our late member Henry F. Montagnier and received in December had not been unpacked.

The Chairman of the House Committee, Mr. Beckwith, was prevented by illness from being present and sent in no report, but remarks of appreciation were made by Dr. Nichols, Mr. Schwab and others.

Mr. Peabody reported for the Climbing Records Committee that nothing was being considered for publication at this time, but that Mr. Hall will continue to receive and file all records of members.

Mr. Fisher reported that the Finance Committee had revised the lease for the rooms to cover the new arrangements. Funds have been withdrawn from the Brooklyn Savings Bank and bonds purchased for investment at favorable prices. The report was approved and ordered filed.

The Nominating Committee, Mr. Burr, being absent sent in a report recommending that Dr. Thorington and Mr. Palmer, Councillors, whose terms expired, be nominated for another term of three years. The report was approved and ordered filed.

Letters were read by the Secretary from Dr. Workman, Messrs. F. P. Farquhar, J. L. J. Hart, and H. S. Kingman who all sent greetings and expressed regret at being unable to be present.

A Memorial to Henry F. Montagnier by Dr. Thorington was read in his absence by the Secretary. Mr. Schwab reported that the Council had voted to name the Montagnier collection of books when received "The Montagnier Memorial Library."

President Schwab spoke in an appreciative manner of Mr. Palmer's splendid work as Editor of the JOURNAL for the last four years. He touched also on the Montagnier books being received. He spoke briefly on the question of having two issues of the JOURNAL a year, possible means of financing it by increased outside subscriptions and advertising, and what it would mean to the members, particularly the distant members. He appointed Messrs. Fisher, Thorington and Henderson a Special Committee to study this matter. Remarks were made by Messrs. J. C. Hurd, Palmer, Miss Hurd and others indicating some desire for a second yearly issue, but recognizing the difficulties at this time, both as to financing and securing sufficient good material. Dr. Hickson said that no club journals are self-supporting, that the solution is a larger membership. Mr. S. P. Fay spoke of interesting A. M. C. members and others in our JOURNAL. Mr. Henderson felt that the circulation could be increased with effort and a lower price for the JOURNAL. Mr. Brown suggested articles on mountain skiing and other articles of more general mountaineering interest to broaden support and interest in the JOURNAL.

There being no further business the meeting adjourned at 3.30 and after a short interval the following illustrated talks were given:

MR. EDWARD L. WOOLF: Dungeon Peak in the Ramparts, a first ascent.

MR. W. B. WILLCOX: The first ascent of Blacktooth in the Big Horns of Wyoming, a peak which has turned back at least two or three earlier attempts by other parties.

MR. HASSLER WHITNEY: A new route or at least a variation from the southeast on the Schallihorn at Zermatt.

MISS LILLIAN GEST: Some excellent moving pictures taken in the Canadian Rockies and Selkirks, of climbing, trail travel, and the Canadian Alpine Club camp at Glacier in 1932.

ANNUAL DINNER

The Annual Dinner was held the same evening at the Women's Republican Club. Seventy-six were present of whom forty-eight were members.

President Schwab presided. After brief remarks in reviewing the year's activities he called upon Mr. Osgood Field who had just returned from Moscow. Mr. Field reported in a very interesting manner the ascent by several members of a Russian expedition last September of a peak in the Pamirs reported to be 24,600 ft. and named by them Stalin Peak. The party suffered several casualties at least two resulting fatally. A most interesting and novel feature was the establishment of high altitude meteorological stations connected with the base station by radio.

Mr. Bradford Washburn showed his magnificent moving and still pictures of the Fairweather Range and his party's attempts on Mt. Crillon. Dr. Ladd made interesting comments on Mr. Washburn's work and pictures.

Miss Georgia Engelhard told of her traverse with Ernest Feuz of Mt. Victoria last summer, the first by a woman, and other climbs.

Mr. Henry S. Hall, Jr., told of his third expedition into the Coast Range, accompanied by Messrs. Roovers and Brown of the Club, Mr. and Mrs. Don Munday of Vancouver and Hans Fuhrer. A first ascent was made of Mt. Combatant (12,200 ft.), other ascents less successfully attempted, and considerable new country seen and visited including Mt. Monarch.

Henry S. Hall, Jr.,
Secretary.

REPORT OF THE LIBRARIAN

The library has been increased considerably during the past year by receipt of books from the estates of Mr. Bryant and Mr. Montagnier. From the former we received ninety-four volumes, of which forty-two were additions, dealing with Alaska, Alps, Himalaya and Canada. Of fifty-two duplicates many were used to replace poorer copies. The bequest also included four volumes of photos, scrapbooks, lantern slides and an ice-axe.

At the time of the annual meeting in January, 1934, Mr. Bryant's books, with others contributed by Mr. Cabot and Dr. Thorington, brought the total of bound volumes to 1,358.

New book-cases have been made for the club rooms, and the committee is now at work on the nine cases of books sent last December by Mrs. Montagnier. These number about 500 volumes, beautifully bound and covering almost all mountaineering regions. Five other cases containing the Mont Blanc collection arrived in April.

Donations of reprints, pamphlets and journals have been contributed by Messrs. Henderson, Cabot, Odell, Thorington and by Dr. Potter. Fifty-one paper-covered books have been bound.

Among the items recently placed on the walls are S. E. S. Allen's rare map of the Lake Louise district, maps of Savoy and Dauphine from an early edition of Blaeu's "Atlas Major," Conrad Kain's ice-axe, and the record of the first ascent of Mt. Louis which he brought down from the summit on August 10th, 1933. All of the historic axes have now been marked by appropriate plates.

Library expenses for 1933 amounted to $67.88. Receipts from sale of duplicate books $46.90; from the Library Fund $50, leaving a balance of $29.22.

Many duplicate books in excellent condition are for sale at the rooms and a mimeographed list may be obtained on application.

The Assistant Secretary, Mr. Grinnell, has prepared an index of mountaineering clubs, including the name of the club, address, sections and regular publications. These cards will be found in the catalogue cabinet.

A few copies remain of the second edition of "A Climber's Guide to the Rocky Mountains of Canada," by Palmer and Thorington, and may be obtained upon application. Price $2.50 per copy, postpaid.

Members are urged to inspect the Club Room, 140 East 46th Street, where an unrivalled collection of books and objects of Alpine interest are on display.

HELEN I. BUCK,
Librarian.

IN MEMORIAM

♣

HIS MAJESTY ALBERT I—KING OF THE BELGIANS
1875-1934

Few men in high places have left so great a mark in the world through uprightness of character, zeal for country's welfare, and bravery in the face of great odds as did His Majesty Albert I, King of the Belgians.

His life has been the inspiration of millions, and doubtless much of his own inspiration was drawn from the mountains.

His mountaineering accomplishments included major ascents in nearly all the main Alpine districts, embracing Chamonix, Zermatt, Bernese Oberland and Bernina. In the Eastern Alps, his brilliant ability on rock enabled him to surmount the difficulties of many notable routes in the Dolomites and Kaisergebirge.

His objection to publicity was well known, and at the outbreak of the World War he destroyed the notes and records of his climbs, declaring that, in view of the work at hand, the past should be forgotten. But those who met him on the peaks cherish the memory of his amiability, simplicity and cordiality.

The American Alpine Club will ever recall with pride having had such a royal mountaineer as Honorary Member.

H. B. deV. S.

DOUGLAS WILLIAM FRESHFIELD
1845-1934

In the death of Douglas W. Freshfield, at Forest Row, Sussex, on February 9th, at the age of eighty-nine years, the Alpine world loses one of its most characteristic figures, and a man whose career was synonymous with the development of every phase of mountaineering: scientific, literary, technical and sporting. Educated at Eton and University College, Oxford, he was a barrister by profession (Inner Temple, 1870), though he soon gave himself fully to furthering the art of mountaineering and the kindred science of geography. His first visit to the Alps was made at the age of nine, and he returned almost every summer thereafter, joining the

Alpine Club in 1864, and becoming a Fellow of the Royal Geographic Society in 1869. His climbs are too numerous to mention individually; they include many of the principal summits of the European Alps, innumerable passes and various first ascents. He made more than twenty first ascents in the Andes, the Caucasus and the Himalaya, and had probably visited every considerable range of mountains on the earth, the Antarctic Continent excepted.

Outside of Europe his most notable journeys were to the Caucasus in 1868, 1887, and 1889, and to the Himalaya in 1899. The scientific results of these expeditions were considerable, and he published in connection with them, "Travels in the Central Caucasus and Bashan," 1869; "The Exploration of the Caucasus," 1896, with important contributions from others; and "Round Kangchenjunga," 1903. The latter volume, owing to the unfortunate destruction of the publisher's stock by fire, is rare and expensive. He was the author of various other volumes on Alpine subjects, and contributed numerous articles to the *Alpine Journal* and the *Journal of the Royal Geographic Society*. He was president of the Alpine Club 1893-1895 and of the Royal Geographic Society 1914-1917, serving as well on the committees of both institutions for many years, and had much to do with the policy, development, and work of the latter. During his presidency of the former, he had a great share in the installation of the Club, on very advantageous terms, in its present home in Savile Row. Several years ago, when it appeared that another move would be necessary, I had the pleasure and privilege of hearing him relate the history of the housing of the Club from the beginning, in a style both humorous and trenchant. At that time he appeared at least twenty years younger than his actual age.

It would seem no idle coincidence that, in its last issue before the death of this great pioneer, the *Alpine Journal* discontinued the chapter devoted to "New Expeditions." Thus the beginning and end of his life mark—and notably—the inception and completion of the conquest of the European Alps.

He was an Active or Honorary Member of the Swiss, French, Italian, American and Japanese Alpine Clubs.

E. C.

HENRY FAIRBANKS MONTAGNIER
1877-1933

It has been a sad duty to write for the American Alpine Club the last memoirs of three great English-speaking Alpine historians —Coolidge, Farrar, and now, MONTAGNIER—each, in his way, outstanding as mountaineer, in relation to his fellowman, and in approach to research.

Coolidge, unyielding in his opinions, yet revealed innate kindliness in his response to even trivial inquiries concerning the history of the Alps. Farrar, more than any man of his generation adding the art of friendship to the sport of mountaineering, specialized in the history of the Oberland. And now Montagnier, brilliant authority on the literature of Mont Blanc, has joined them. One knew that Farrar was right; Coolidge demanded that you think him so; Montagnier seemed always wistfully hoping that one believed in him.

Montagnier, although born in Cincinnati, passed his childhood in Terre Haute, Indiana, which his ancestors, a Lyonnais family, founded. He was educated at Armor Military School and at Princeton University, leaving the class of 1899—among whose members he was affectionately known as "Count"—in the spring of his junior year.

With his grandmother, a woman keenly interested in literature, he always spoke French, and to this association may be traced an inclination toward research which culminated in his devoting himself to the history of Alpine exploration. Montagnier's parents died when he was young, and independent means permitted him to travel as his fancy dictated. When but seventeen, a bicycle trip with a friend through the Western Alps, and the reading of Whymper's *Scrambles,* further directed his affection toward mountain ranges.

In 1897, at the age of twenty, he made several ascents in the Oberland, and thereafter climbed in nearly every season until the year of his death. In addition to visiting all districts of the Alps, he accomplished notable work in the Himalaya and on the volcanoes of the Canary Islands, his record being fully chronicled in the lists of the American Alpine Club.

A chance meeting with Wicks at the Schwarzegg hut in 1902 led to a friendship through which Montagnier eventually became

Photo, Otto and Pirou

HENRY FAIRBANKS MONTAGNIER
(1877-1933)

acquainted with all the prominent mountaineers of his day. He joined the Alpine Club in 1903 and became a Fellow of the Royal Geographical Society three years later. His climbing companions included such notable men as General Bruce, E. R. Blanchet and the Chevalier de Cessole.

For a number of years Montagnier lived in Italy, afterward residing in Berne (1915-20), and finally removing to *Chalet Beau Revéil,* Champery. There he built up his library, part of which has been presented to the American Alpine Club.

Montagnier's name will endure largely as a commentator and investigator on the literature of Mont Blanc. He assisted Dübi in *Paccard wider Mont Blanc* (1903), collaborated with Freshfield in the *Life of H. B. de Saussure* (1920), and with Commandant Gaillard in the monographs, *Journal d'un Voyage à Chamouni* (1926) and *Le Mont Blanc et Le Col du Géant* (1927). The *Alpine Journal* contains his papers: "A Bibliography of the Ascents of Mont Blanc (1786-1853)." "Dr. Paccard's Lost Narrative," "Early Extracts from the Travellers' Book at Eggishorn," "The Early History of the Col du Géant and the Legend of the Col Major," "Early Records of Théodule, Weissthor, etc.," "Records of Early Expeditions in the Zermatt District," and "Thomas Blaikie and Michel-Gabriel Paccard."

Several years ago Montagnier transferred his place of residence to Paris. Complications followed an operation at Montreux in May, 1933, and he died on July 16th, being fifty-five years of age.

Although he represented the American Alpine Club (which he joined in 1903) at the International Congress at Chamonix in 1932, it cannot be said that Montagnier was well known to the membership save through a brief visit to the United States some months earlier in the same year, when he attended the annual meeting of the Club. It is, therefore, not inappropriate to quote his lifelong friend, Dr. Claude Wilson, who describes him as "a good companion of pleasantly *bon-vivant* disposition, the ranconteur with a tendency to impart ingenuous confidences on which one looks back with the smile of congenial reminiscence, the perfect host, the equally appreciative guest."

Now Montagnier has gone; to that bourne of which Farrar once happily remarked: "But what a Valhalla! Upon my word we shall have some tales to tell them all."

J. M. T.

CONRAD KAIN
1883-1934

In the little village of Nasswald, Lower Austria, not far from Vienna, CONRAD KAIN was born on August 10th, 1883. His death occurred in hospital at Cranbrook, British Columbia, on February 2, 1934. These dates bound the life-span of a romantic philosopher and lover of hills, whose spirit never grew old.

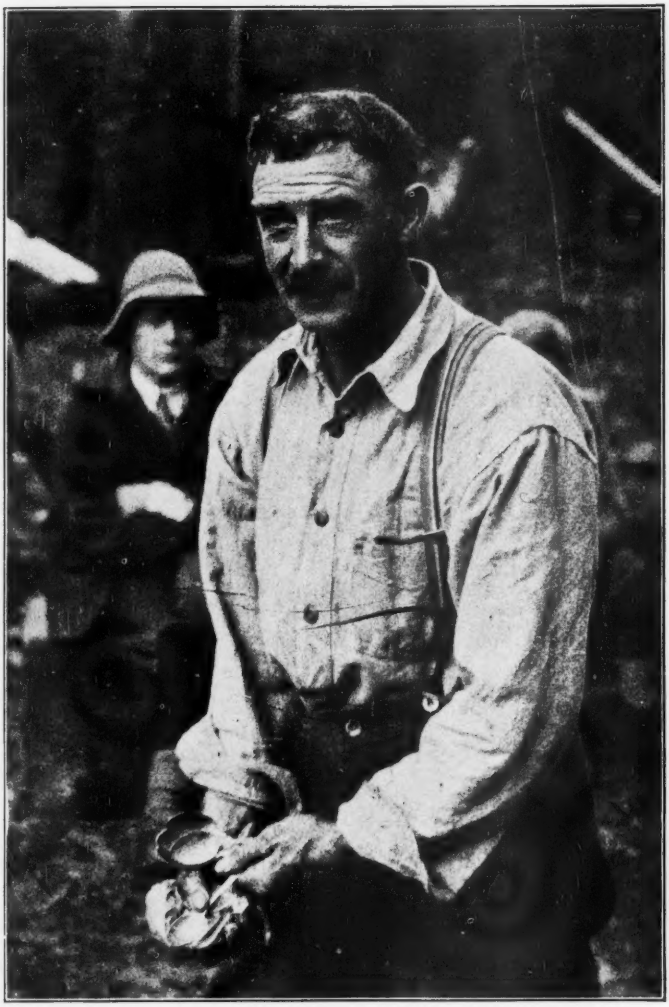
According to Conrad, he began to climb at the age of three, earning his first money by it when he was sixteen, having learned the various routes on the nearby Raxalpe. Daniel Innthaler, a much-sought-after guide of the day, befriended him and sent him his first tourists.

Never a porter or an *Aspirant,* Conrad passed the guide's *Prüfung* when twenty-one, among his early patrons being Gottfried Merzbacher and Samuel Turner. Prior to 1909, Kain made many climbs in various districts of the Alps, especially in Dauphiné and on the aiguilles of Mont Blanc, becoming known as a guide of "very great promise" (*A. J.*, 28, p. 38). In the Dolomites he considered the Vajolet towers, the east face of Rosengarten, Fünffingerspitze by Schmitt-kamin, the south face of Marmolata, and the north wall of Kleine Zinne as ideal and his favorite climbs. Fascinated by the Guglia di Brenta, he once went many miles out of his way to ascend it, and also spent part of a season in Corsica. His services were in demand, and German climbers considered him in the first flight of guides. Unfortunately we know little of his Alpine climbs, for his *Führer-bücher* were lost.[1]

In 1909 Conrad came to Canada, and was guide at the Lake O'Hara camp. In the following year he was climbing at the Consolation camp, led the party which went up the Bow and down the Yoho, and accompanied Longstaff and Wheeler in their crossing of the Purcell Range.

Accompanying the Alpine Club of Canada's expedition to Yellowhead Pass and Mt. Robson, in 1911, he met Ned Hollister and Donald Phillips. Conrad made a daring solo ascent of Whitehorn (on his twenty-eighth birthday), and led Harmon to the

[1] Since the above was written, Conrad's diary covering his life up to 1910 has come into my possession. It contains a complete list of his climbs in the Alps and Corsica. It is a unique document, filled with dramatic incident.—*Ed.*



CONRAD KAIN (1883-1934)
Findlay Creek, 1930

CONRAD KAIN
After the first ascent of Mt. Robson, 1913

summit of Resplendent. His delight in packtrain travel was increased by the return journey from Maligne Lake to Banff by way of Wilcox Pass. He became interested in game, and spent at least one winter trapping with Phillips on Smoky River.

"In general," he wrote, "I adapted myself to the New World and its ways, but at times I caught myself meditating. Visions of the Alps and the Dolomites would flash through my mind, linked up with Old World memories—of life in the inns, with music and song. I realized that these were symptoms, universally known as 'Heim-weh,' but fortunately I was well fortified with a prescription for this malady. It read: 'Take life as it comes, and make the best of it, and always be your own adviser in small matters.' "

His acquaintance with Hollister gained him a place in the Smithsonian expedition to the Altai, which left St. Petersburg on June 8th, 1912, for the purpose of collecting mammals. Conrad afterwards found much amusement in showing his friends at home the Russian passport on which he was described as "professor," further proclaiming that "snaring mice can be just as exciting as hunting elephants if you get the point of view."

Conrad then revisited his old stamping-grounds in the Alps: "Quenched my three-year old thirst with beer and had a jolly time, living my youth over again. It was beautiful yet strange; it made me feel very lonely—I longed for the solitude that one finds in the Rockies; for the campfire and the care-free life."

In June, 1913, he landed in Canada, after a long voyage from England by way of Australia and New Zealand to British Columbia. On the way he stopped at the Island of Madeira, which ever after he thought the most beautiful place in the world. He attended the Cathedral Mt. camp in July, and in the following month made his notable traverse of Mt. Robson with Foster and MacCarthy.

The winter 1913-14 was spent in New Zealand with H. O. Frind, carrying out a fine series of climbs, returning to Canada for the Upper Yoho camp. In August he made the first ascent of Mt. Farnham in the Purcells.

During his season in New Zealand, his activity in searching for the bodies of S. L. King and his two guides, killed on Mt. Cook, brought him an engagement from the Tourist Department, and he became head of the guiding staff at the Hermitage in November, 1914. By his coaching of young native guides he undoubtedly

contributed much to the improvement of technic in the New Zealand Alps, a matter which in recent years has been given official attention.

Frind brought him back to Canada in the summer of 1915, attending the Ptarmigan Lake camp, and accompanying MacCarthy's parties in the Purcells, when the Big Salmon and Horsethief Valleys were explored.

Returning to New Zealand as private guide in September, he accomplished the traverse of Mt. Cook with Mrs. Thomson, of Wellington, in the following January—"a marvellous feat unequalled for daring in the annals of the Southern Alps" (*A. J.*, 39, p. 275).

Conrad was back in Canada for the Healy Creek camp in July, 1916, and led MacCarthy to the summit of Mt. Louis, after which they went to the Bugaboo Group of the Purcells and made first ascents of Howser and Bugaboo Spires, the latter considered by Kain to be his most difficult climb in Canada.

A year later Conrad married and settled on a little farm at Wilmer in the Columbia Valley. His wife, born in British Guiana, spoke several languages and had a gift for handling animals. Largely to her fell the management of their small fur-farm, where they raised mink, marten and chinchilla rabbits. She and Conrad were good companions for sixteen years, her death in the early part of 1933 being a great blow to him. We hold the memory of them, beside the white cottage, window-deep in sweet-peas and currant bushes, waving good-bye as we started homeward towards the dusky foothills of the Rockies.

During several following seasons Kain was employed by the Interprovincial Survey, making many climbs along Athabaska and Bush Rivers. In the winter he trapped, on one occasion making a solitary journey into the wild area west of Thompson Pass. He also acquired an outfit of horses and took out hunting parties in the Purcells. He was one of the few who used Simpson's Crossing of Kootenay River, and Cross River, as a route to Mt. Assiniboine. In March, 1919, he made a solo ascent of Mt. Jumbo on snowshoes, the first winter ascent in the Purcell Range.

In 1921, Kain was at the Assiniboine camp, ascending Mt. Eon after the fatal accident, and assisting in bringing down Dr. Stone's body.

In 1923 he accepted an engagement with Ladd and myself to visit the Columbia icefield, North Twin and Saskatchewan being

among our prizes. Jim Simpson was outfitter, and to hear Conrad trading stories with him was to know where Munchausen left off.

In the following summer he accompanied Strumia and myself on a long season to Athabaska Pass, where Mt. Hooker fell to us, and to the Tonquin and Robson areas. Kain remained at the camp of the Alpine Club of Canada, conducting parties up Mt. Robson—to the risks of which he was keenly alive. Later, he went with Palmer and Hickson up the Athabaska, ascending King Edward.

Conrad spent some six weeks in the autumn of 1925 hunting bear in southwestern Alaska, but seems to have done little mountaineering in this or the two succeeding years.

In 1928, Cromwell, Hillhouse and I visited the Purcells, Conrad taking us to the head of Toby Creek. The first ascent of Earl Grey, and the traverse of Jumbo to the Lake of the Hanging Glaciers were of his devising. So attractive did it prove that Cromwell and I returned in 1930, Peter Kaufmann being with us in addition. Conrad conducted us up Dutch Creek, source of the Columbia, joining us in the first ascent of Mt. Findlay, but otherwise contenting himself with running the outfit. Later, however, he went with Cromwell and Kaufmann to the Bugaboos, participating in several ascents, but became ill while attempting Bugaboo Spire and was obliged to desist.

During the following summer, Cromwell and I, with Edward Feuz and Kain, explored Findlay Creek to its head.

In 1933 my wife and I went with Kain to the Bugaboos for topographical purposes. Conrad was by way of regaining his old spirits and regaled us with many a fine tale. Late in July, Kingman joined me at Lake Louise, Conrad meeting us there, the combined party going with Simpson to Bow Lake. From Peyto Lake several new ascents were made, with final crossing of the snowfields to Yoho Valley.

Conrad, who had not been away from the Columbia Valley since 1925, enjoyed himself hugely, visiting old friends at Banff, climbing such peaks as Lefroy and Louis (on his fiftieth birthday), and looking in upon the camp in Paradise Valley. While there he met Professor and Mrs. Richards, of Magdalene College, who went with him to the Bugaboos. After ascending Pigeon Spire, they made a long first ascent of the highest summit of the Bobbie Burns Group, just to the north, descending Warren glacier throughout its length. Conrad was enchanted with the new views

of his beloved Bugaboo Spire and wrote at length of his plans to return there with us another season. But his last climb was over.

His name is borne by a finger-like peak of the Robson area, which he himself selected. Nasswald Peak, in the Assiniboine Group, was ascended and named by him. Birthday Peak, in the Purcells, was climbed on his natal day. In the Southern Alps of New Zealand, Mt. Conrad, in the Murchison district, holds him in remembrance.

Conrad, with little assistance, wrote well, several of his papers appearing in various journals.[2] His famous tale of the "Million Guide," humorously describes his adventure when, disguised as a tourist, he hired a guide to take him up a peak. "I do not tell that story any more," he said to us last summer—meaning only that the years were passing.

To evaluate Conrad Kain as a guide alone is as difficult as it would be rash. One met him in Canada when youthful impetuosity was a less driving force, while average climb and climber were not of the caliber he had known in the Alps. On such peaks as Robson, Louis and Bugaboo Spire he showed what he could do when required; in his solitary fight with Whitehorn he evidenced his own spirit of enterprise which took no thought of consequence.

His first ascents of named peaks in the Rockies and Purcells exceed fifty in number, but the list is incomplete. His new routes the ordinary climbs are countless.[3] He held the unique record of having led the first ascents of the highest peaks of the Rockies and of the Purcells, and is the only one thus far to have ascended the three loftiest summits of the Canadian Rockies. In New Zealand he climbed fifty-nine mountains, of which twenty-nine were first ascents. He reckoned his total of great climbs to be in excess of a thousand.

More clearly than any other, Conrad laid down the methods by which a guide might hope to maintain the confidence of a party: "First, he should never show fear. Second, he should be courteous to all, and always give special attention to the weakest member in the party. Third, he should be witty, and able to make up

[2] "The Ascent of Mt. Robson," *A. J.*, 28, p. 35; *C. A. J.*, vi, 19. "The First Ascent of Mt. Whitehorn," *C. A. J.*, vi, 49. "Records of Ascents in New Zealand," *A. J.*, 28 p. 345. "The Eastern Valleys of the Purcell Range," *Bull. Phila. Geogr. Soc.*, xxvi, 69. "Reminiscences of Seven Summers in Canada," *A. A. J.*, i, 290. "Long Ago on Mount Cook," *A. A. J.*, i, 481.

[3] A fragmentary list which he made of his Canadian climbs contains the names of 192 separate peaks.

a white lie if necessary on short notice, and tell it in a convincing manner. Fourth, he should know when and how to show authority; and, when the situation demands it, should be able to give a good scolding to whomsoever deserves it."

On rock, in his prime, Kain was unquestionably a finished performer; on snow and ice his judgment was sound, with step-cutting unfailingly conforming to the needs of his party. Wide experience in various districts had taught him many tricks with rope and belay. He lacked a quick comprehension of topography, a phase where amateur may excel guide, making up for it by his route-finding ability on the mountain at hand. Even on new peaks he preferred to traverse and would cleverly find a way down. On snow he was inclined to use the rope too little, but backing his decision by uncanny knowledge of snow conditions, his youthful experiences as an expert ski-runner, and his Canadian adventures on winter trap-lines standing him in good stead.

With an axe in the woods he was the equal of Phillips or Simpson; he was a good and clean cook, and handled horses with gentleness, talking to them as if they were children. His great capacity for weight-carrying and enduring hardships was continually overtaxed.

Conrad was always wondering whether, with greater educational opportunity, he might not have accomplished something in medicine or natural science, but feared that he would have been less content.

Of later years he had begun to write down some of his observations, which had they been completed, would assuredly have made a biography as interesting as that of Christian Klucker. Kain was a voluminous reader on all subjects, and his avid curiosity concerning human nature was to have been embodied in a chapter called "Unspoken Thoughts of a Guide," which, to say the least, would have been revealing. He could talk of many things, from the history of Austrian royalty to the intimate domestic habits of marten and muskrat, and there was always something to learn from him. Born with gifts of laughter and vivid expression, he sensed that the world was quite mad.

There was an almost oriental facility in his story-telling, and the last of a thousand-and-one nights would not have ended the spark of mischief in his eye, the gay mimicry in his voice, or the subtle gesturing of his hand.

No desire to rush peaks or to break records was to be found in Conrad Kain, and his increasing proclivity for lingering near timberline may be attributed largely to his appreciation of mountain beauty, as it was understood by guides in the Golden Age of mountaineering in the Alps. "Eile mit Weile" was a proverb learned from Sepp Innerkofler in the days of his youth. He knew full well that life is not compounded solely of action.

In his philosophy there should be no evident sadness in parting: "It is good to have been once young," he said, "if only you have happy memories." The song must go on. He played a part in the inspiring moments of many lives, and gave more to life than he asked of it. "He will be much missed," wrote his neighbors in the Columbia Valley, "for he was a kind, honest man."

Kain was undoubtedly the most glamorous figure in Canadian mountaineering, and those who climbed with him know that his death separates all that went before from whatever the future may bring forth, rounding out (as it almost does) the first half-century of Canadian alpinism, during which the principal peaks of the Rockies and the Interior Ranges were conquered. Guides in days to come will scarcely have such great experience in travel, of new ascents, of trail-breaking.

A candle burned at both ends—a brave soul gone too soon. Let it be remembered that some of us would have given our right hands to delay Time's turning down of Conrad's glass.

J. M. T.

TOM WILSON
1859-1933

Tom Wilson, last of the Canadian Pacific trail-blazers and explorers, died at Banff on September 20th, 1933, at the age of seventy-four.

His life was so full of meaning in everything pertaining to human interest that, in order to do it justice in the space allotted, the principal historical points of his career must be passed over very briefly.

Wilson was born at Bondhead, Ontario, on August 21st, 1859. At the age of sixteen he began to seek adventure and went to Sioux City, Iowa, on the western frontier. From there he returned to Barrie where he had been educated, and later joined the Northwest Mounted Police. When the first exploring parties were organized in connection with the building of the Canadian Pacific he applied for a discharge and in 1881 joined Major

Photo W. D. Wilcox

TOM WILSON (1859-1933)
With the Indian, John Hunter, at Lake Louise in 1928.

Rogers, the so-called "swearing Major." The Major had a very gruff manner and at first there were misunderstandings between the two. On one occasion of their early acquaintance the horses had become lost and Major Rogers blamed Wilson in a manner that the latter thought entirely unjust. For several days there was considerable silence and constraint around the camp, until at length the Major put his hand in Wilson's and apologized. This was the beginning of a life-long friendship between the two and Wilson recognized that a warm heart lay beneath a rough exterior. Another incident is recorded, when after a long day's march, Wilson had started to make camp on the shore of what is now known as Bath Creek. The Major came up, wanting to go on, but Wilson said the horses had done enough for one day and that the creek was too high. "Afraid eh? Want the old man to show you?" remarked the Major, and immediately started to cross. The horse was submerged in the raging stream and Wilson finally brought his chief ashore by aid of a pole. The horse got out lower down and the Major was content to sit by the fire and get warm. After that, whenever Bath Creek was high and muddy the men said that the Major must be taking a bath.

This was in 1881. The next season, Tom and Fred (later Sir Frederick) Aylmer were the only two to rejoin the party. In that year, 1882, Wilson discovered Lake Louise and Emerald Lake. In 1884 he blazed two trails into Lake Louise and took Mrs. James Ross and party to the lake. These were the first white women to see it. In 1887 he opened up a new trail for John Enselwood of the Canadian Pacific, who took in an extra gang of men, built a lean-to shelter and put a boat on the lake. This shelter was the first building at Lake Louise.

In 1884, Wilson met at Silver City, now Castle Mountain, the niece of Rev. George McDougall, the missionary who was frozen to death on the plains in the early days. He married her at Edmonton in 1885. Their honeymoon trip was a drive from Edmonton to Morley in a buckboard, camping on the way. They had a little log-cabin back of the Indian Reservation and their nearest neighbor was half a mile distant. There were four children, Ada, John, Rene, and Edd when they moved to Banff in 1893. Two more, Bessie and Dora were born at Banff. The writer first became acquainted with Wilson in 1894 and subsequently, when he was outfitted for early trips up the Bow, to Mt. Assiniboine and other places. Since that time up to Wilson's

death he has been in more or less constant touch with him, either by personal visits to the mountains, or by an uninterrupted correspondence.

In the same year, 1885, he joined the Steele Scouts, and took part in many skirmishes of the Riel Rebellion. During the next few years he was active in exploratory work in the mountains. He nearly lost his life during exploration of the Bow, Howse Pass and Blaeberry route for the railroad, before the Kicking Horse Pass was decided on. On another occasion he fell through a snow-bridge of the Pipestone River and was almost frozen to death. Space does not permit recording in detail the great amount of other exploration and trail-building done by Wilson in the early years. When Abbott was killed on Mt. Lefroy in 1896 he assisted in making arrangements for the recovery of his body. He outfitted Collie on the expeditions of 1897 and 1898, and C. S. Thompson in 1900. In 1901 he accompanied Whymper and Outram to the Yoho Valley and crossed the Kiwetinok Pass with Whymper and Klucker. In 1904 he went with Whymper to Crowsnest Pass, making with him and two Swiss guides the first ascent of Crowsnest Mt.

Wilson was a keen observer and lover of nature. He possessed an untiring curiosity to see what was beyond every pass or at every valley end. He could recall in most intimate detail, and relate in the most interesting manner, the unusual features of any part of the mountains he had ever seen. He spoke in the soft, low voice of the trapper or the prospector—in a word, of those who have lived long in the solitude of the wilderness. He had a keen sense of humor and a merry twinkle in his eye whenever he greeted an old friend. No doubt his cheerful and courageous spirit hid many a heart pain in the last two or three years of his life. Generous to a degree, he never turned away from his door anyone in need of food or money. He was fond of all wild life and particularly birds and for this reason regretted that cats were allowed in the National Parks. He was well known by the Stoney Indians and had many personal friends among them. He understood their customs, something of their language and the sign language as well. The tragic death of his friend, Chief Hector Crawler, two years ago, who after a life filled with adventure, was killed by an angry cow in a corral, affected Wilson deeply.

It was natural that he should have been interested in all that pertained to the history of Canada and the Northwest. This led

to the gradual acquisition of a valuable library of rare historical works, which gave him constant enjoyment and pleasure.

The death of F. W. Padmore in 1921 left Wilson and the Major's nephew the only surviving members of a group of twenty who had met at Wapta Lake and vowed to write once a year to one another. In 1924 a memorial tablet was unveiled in Wilson's honor in the Yoho Valley. A. L. Rogers' passing in 1929 put an end to their plans to celebrate the fiftieth anniversary of the discovery of Rogers Pass and Albert Canyon in 1931.

Wilson had in his employ at various times of his long career as an outfitter, many guides and packers who were famous for their local color and individuality. Among them were Bill Peyto, Harry Lang, Fred Stephens, Tom Lusk, Bob Campbell, Ross Peecock, Jim Wood and Nigel Vavasour. Most of these were Canadians, though Fred Stephens was formerly the swinger of a powerful axe in the Michigan forests, and Tom Lusk was a bronco buster from Texas. These were some of the guides who helped bring success to many notable exploring and mountaineering expeditions during the past forty years.

As the years passed and his old-timer friends were called by death, it was natural that Tom Wilson should make a host of new acquaintances among the tourists and mountain climbers who came from all parts of the world to enjoy the wonders of the Canadian Rockies. Many of these were accustomed to foregather, at least once each year on August 21st, his birthday, to spend a pleasant day at Lake Louise and later have a dinner at which all available friends were welcome. Among those who at one time or another were accustomed to attend these festivities were Prof. Fay, Alfred Castle, Dr. Hickson, Howard Palmer, Fred Armbrister, Val Fynn and many others, including the writer.

About two years ago Wilson was stricken with cataract of both eyes and the first symptoms of heart trouble made their appearance. In spite of these afflictions he kept up a cheerful attitude and courageous spirit. Toward the end he was unable to distinguish people except by their voices, and it is of interest to know that loyal friends had made all arrangements to send him to Chicago for operation when the proper time should arrive. Probably no man of the Canadian Northwest ever had a simpler and more kindly spirit, or left behind a greater number of admiring friends.

W. D. W.

BOOK REVIEWS

The Naked Mountain, by Elizabeth Knowlton. vii + 355 pages, 34 illustrations, diagrams and index. New York and London. G. P. Putnam's Sons, 1933. Price $5.00.

This book, devoted to the assault on Nanga Parbat (26,620 ft.) by the German-American expedition of 1932, breaks new ground in the field of mountaineering chronicles. Discarding the methodical narration of facts and events that has been hallowed by tradition, the authoress adopts a subjective treatment which delineates the fortunes of the expedition from the standpoint of the collective morale and emotional reactions of the participants. This innovation we welcome and commend. It enables the reader to absorb the spirit and atmosphere of a big Himalayan expedition quickly and effectively. And he gains a good insight into the epic psychology which impels puny man to pit himself against these gigantic manifestations of nature—a matter that only a gifted talent for the pen can make at all comprehensible to the layman.

But the method is not without its drawbacks. At some points we are conscious of a certain vagueness regarding the whereabouts of the party on the mountain; and at others the narrative loses in force and detail when filtered through another's personality. A more regrettable defect is the rather casual handling, or complete omission, of figures of elevation for camps and other points attained. Seven such camps were occupied on the mountain, ranging from 10,000 ft. at the base camp to 23,000 ft. for Camp VII, but we did not notice elevations for Camps III, V and VI, and IV was given variously as "over 19,000" and "almost 20,000." But perhaps this is due to the disclaimer of scientific aims: "No, we shall *not* survey, or map or geologize or study climate or plant life" (p. 16). The expedition was solely a sporting proposition and it was felt that mountaineering justifies itself without more. To this dictum we cannot subscribe unreservedly. We feel that much of the richness of mountaineering appeal would be sacrificed were it to be generally adopted, and we deem it an agreeable inconsistency that the authoress saw fit to include valuable appen-

dices on geology, weather, diet, equipment, etc., which we would not willingly have missed.

There were seven in the climbing party, one of whom—Rand Herron—was an American. Miss Knowlton, the other American, "had been brought in at the last moment to handle the English-speaking newspaper work" as well as "all sorts of other jobs." Possessing considerable mountaineering experience, she spent over a month in the high camps on Nanga Parbat, though not actually attempting the peak. One wonders whether a typewriter altitude record was not made on this occasion, for its use is hinted at in Camp IV at "almost 20,000 ft."?

As the expedition has been the subject of two articles in the Journal (Vol. II, pp. 18, 32) we omit reference here to its vicissitudes and accomplishments. The book is charmingly written and contains many finely drawn descriptions of native life and scenery. The format is most attractive and the illustrations are capital—although we would have welcomed more of them—especially in a volume selling at this price. "Naked Mountain" is unquestionably the best book on Himalayan climbing written by an American since the war and deserves a place on the shelves of every mountaineer.

H. P.

Mont Blanc Sideshow, The Life and Times of Albert Smith, by J. Monroe Thorington. 8 vo., 255 pages including appendices, bibliography and index, containing twenty-nine illustrations. Philadelphia. The John C. Winston Co., 1934. Price $2.50.

The author has written a biography of Albert Smith, set in the society and time in which he lived. The research evidenced, the picturesque flow of the narrative and the reproduction of interesting old prints leaves the reader feeling himself in the "Roar of the Crowd."

The short outline of Smith's life in the Foreword is an admirable "prologue to the omen coming on," while the opening chapter contains the charming story of the childhood of "the boy who never grew up," enthralled by dreams of romantic adventure and particularly by that vision which became the keynote of his life—the Great White Mountain.

The hero's connection with Punch, his relations with Leech, Jerrold, Dickens, Trollope, Thackeray, P. T. Barnum and others

are told, and how Thackeray is introduced to Barnum in New York by a letter from Smith. Smith has a hair-raising adventure in a balloon; he voyages to Constantinople and the Nile, and eventually to China.

Feminine climbers will realize the strides they have made in mountaineering accomplishments since Smith's day when they read his comments of his trip (for it was scarcely more than that) to the Jardin: "Indeed we are told that, now and then, young ladies were found bold enough to make the attempt. How on earth (he might have added 'on ice') they contrive to traverse the Ponts, or climb the Couvercle, I cannot very well make out." Smith was not a mountaineer of much experience, but in his day all paths had not been blasted out and made easier by iron stanchions.

Dr. Thorington tells in short space the story of Smith's ascent of Mont Blanc in 1851. According to C. E. Mathews it was the thirty-seventh ascent of the mountain all by way of the Grands Mulets. Smith writes of this at greater length in his *Story of Mont Blanc,* a volume that Dr. Thorington says "mountaineers will read and re-read long after many another book of the high hills is forgotten."

Does the author's liking for his hero cause him to pass lightly over his foibles? One thinks that the quotation from *Annals of Mont Blanc,* that "scores of men who afterwards distinguished themselves in the exploration of the great Alps, first had their imaginations fired by listening to the interesting story told at Egyptian Hall," must have been written in extenuation of the severe criticism which preceded it. It is certain that some of Smith's statements do more credit to his ability as a showman than they do to "his taste exact for faultless fact," yet he lived at a time when men were afraid to think for themselves and to say what they thought. Hence Smith's method was a new departure and had more than its share of disapproval. He was the first one who refused to take Mont Blanc seriously, and it was due in large part to his influence that mountain ascents came to be considered "good fun."

But that Smith was a great showman there can be no doubt. His Mont Blanc Show began in March, 1852, and, running for over two thousand performances, terminated only at his death, May 23rd, 1860. A link with the past is that Mr. Freshfield, at

the age of nine, heard the lecture and remembered the "absurd picture of the Mur de la Côte. I was very much disappointed ten years later by the reality." Dr. Thorington carries us through these last years, making the show vivid by the remarkable accumulation of material industriously assembled and cleverly selected.

Manuel D'Alpinisme. Two volumes, 8 vo. Chambéry: Librairie Dardel, 1934.

With the evolution of Alpinism rapidly going on, the technic of mountain climbing is progressively more complex. It is natural then that new books on Alpine craft should appear periodically and, as a matter of fact, they do.

The "Manuel D'Alpinisme" is the latest such presentation and comes as a joint product of members of the C. A. F. and the G. H. M. The principle of collaboration, laudable if not new, adds to the value of the book, and explains at the same time some obvious inequalities in the manner of treatment and intrinsic value of the various chapters.

In Vol. 2 which covers the technical part, the general principles of climbing are dealt with profusely, although occasionally such important topics as the scale of difficulty (at least for the use of the Alpine guide-books) receive little more than passing remarks. Every phase of equipment is adequately covered with the possible exception of the question of water-proof clothing and bivouac equipment. This important topic is also vaguely dealt with in the chapter on hygiene. In both volumes one feels the need of more and better pictures in place of prolix verbal descriptions.

The technic of rock-climbing is minutely described; in fact even overdone, as in the case of the amusing mathematical consideration of the adhesion of the sole of the shoes related to the inclination of the holds. The part dealing with special procedures and artificial means of rock-climbing would hardly satisfy a Dolomitic acrobat, but is more than sufficient for a beginner. The description of ice technic is concise but clear and complete. The chapter on the dangers of the mountain is fortunately shorter than in similar publications and does not appear (as such topics often do) as a long obituary list. The few pages on ski technic are wholly insufficient and useless either for a skier or mountaineer

and should be completed or omitted. The pages on food and food preparations are a precious contribution to the culinary science, if we forgive the author the undeserved denunciation of fats as poor food in the mountains. Some of the recipes have the long-forgotten flavor of the solitude of mountain huts that one could enjoy in the days when the flood of tourists and would-be climbers had not yet gone above the limit of vegetation.

Vol. I deals with the scientific part and is generally very good. It is a collection of various data on geology, glaciology, mineralogy, meterology, topography, photography and geography as applied to climbing, related in a clear and interesting way. It is a most valuable addition to the literature of mountain technic.

M. M. S.

—*10 . . . The Sports of Winter.* Ninety plates by Samivel. 4 to. Paris. Delagrave, 1933. Price Fr. 25.

The author, who has already depicted the pleasures of Alpinism in a nerve-shattering volume, now turns his attention to the social and technical aspects of winter sport. Several prominent skiers, members of the American Alpine Club, were approached to review his latest book, but report, after having seen it, that they are under physicians' care for convulsions. Overcome by laughter, these experts fail to see that Samivel is in deadly earnest. No one before him has used an air-brush to make snow look so soft and harmless, but there is lurking peril nevertheless, at least for our old friends, Baculot and Samovar, who have for the season deserted the hazards of rope and axe for the giddy swoopings of skis and skates. It is not nature in the raw that troubles them, for that is mild enough, but these beginners are constantly in difficulty from the various fauna, human and otherwise, that crosses their path. That is Samivel's message. Only when his heroes are alone with their perfect snow and powdered trees does their adventuring reach happy climax.

Now you will have to see this for yourself; but meanwhile what are we to do with our fellow club members who have nearly perished in mirth? H. S. K., the old ski-maestro of Minneapolis, is one of these, else this book would have been reviewed by him instead of by

J. M. T.

Alpine Days and Nights, by W. T. Kirkpatrick, with a Paper by the late R. Philip Hope, and a Foreword by Col. E. L. Strutt, 8 vo., 198 pages, with index and twelve illustrations. London. George Allen & Unwin Ltd., 1932. Price 7/6.

This is the story of a mountaineering partnership, as recorded in articles which have appeared in the *Alpine Journal* during the last thirty-two years. Following the guideless path in the footsteps of Girdlestone, although improving on his somewhat erratic technique, Kirkpatrick and Hope were ahead of their time. Using no artificial aids they climbed the peaks that could be stormed by fair means, and were content to let the rest remain inaccessible. One thinks, therefore, that their standard was one of enjoyment rather than one based solely on difficulty. Kirkpatrick excelled on rocks, while Hope was the ice expert of the team. They brought reduction of equipment-weight to a high art, and yet were known to have served hot four-course dinners on the summit of the Meije. Together they climbed in almost every district of the Alps. But, most of all, one is impressed by Hope's ingenuity in inventing such things as a folding aluminum camera, weighing one pound, yet taking quarter-plate photos; a rucksack of airplane cloth, weighing but seven ounces; aluminum plates that clipped on the knee, enabling one to eat as at a table in any place where one could sit down; and the grand combination of detachable umbrellas made on strong ash sticks with spikes, for use on glacier promenades. J. M. T.

An Epitome of Fifty Years' Climbing, by Claude Wilson. Printed for private distribution. 1933.

Written at the instigation of Mr. Henry F. Montagnier and limited to 125 copies for private distribution, the main part of this book consists of a tabulated list of climbs made by the author, a former president of the Alpine Club. The preliminary chapters on climbing incidents, and the personal characteristics of guides and companions who took part in 122 climbs with guides and 238 without guides, are proof of the author's wide association with those who have been most active during the principal period of Alpine history. It is an intimate and condensed record of many years' climbing in the European Alps.

E. P. B.

Some Mountain Views, by Dudley Leavitt Pickman. 12 mo., 94 pages, with thirty-four illustrations from photographs. Boston. G. C. Manthorne & Co., 1933. Price $2.00.

The author of this slender book of world wanderings in Alpine regions figures in Stephen d'Arve's list as an American who ascended Mont Blanc on August 28, 1875. The author himself alludes to this event, accomplished in company with his uncle, Edward Silsbee, who once possessed the manuscript of Shelley's "Skylark." In a humorous chapter Mr. Silsbee is the hero (possibly the victim) of an adventure in which he lost his trousers while fording the Arveiron and startled the peasant women in the fields by emerging in an improvised straw skirt.

One is linked with the past by descriptions of an ascent of the Matterhorn with young Taugwalder, of Monte Rosa from the Riffel, and of the Jungfrau from the ancient shelter of Concordia. In addition to the Alpine section, there are chapters on mountain nomenclature, Fujiyama, and the views from Darjeeling.

Mr. Pickman, although selecting beautiful illustrations, has been unfortunate in captioning them. Thus, the peak shown (p. 21) is not the Jungfrau, but the Lauterbrunner Breithorn; the Klein Glockner (p. 51) is not in Tyrol, nor is Mt. Assiniboine (p. 55) entirely in British Columbia. The two views of the Everest massif (pp. 59, 90) are almost identical and show the Nepalese, not the Tibetan, side.

In the text there are also errors in the spelling of names: "Riffle" for Riffel, "Ruwensori" for Ruwenzori, "Nanga Tarbat" for Nanga Parbat, "Kashmere" for Kashmir.

J. M. T.

On Skis Over the Mountains, by Walter Mosauer. 8 vo., 85 pages, with xi diagrammatic plates. Hollywood. The Cloister Press. Price $0.50.

This illustrated primer of modern skiing, based on the Arlberg technique, has been written by Dr. Mosauer, a member of the Sierra Club, to meet the need for an inexpensive and concise introduction to this sport. Equipment and essential maneuvers are described, the pamphlet forming a useful addition to the literature of this popular pastime.

Gesellschaft Alpiner Bücherfreunde (Munich, Theresienstr. 78/11). Annual subscription 10 marks. Books issued in 1933 include:

No. 12: J. B. von Tscharner, *Die Bernina* (1786). Oblong, 8 vo., pp. 44, with frontispiece. An annotated reprint of von Tscharner's poetical description of Bernina glaciers, including an account of a fatal accident to an Englishman in 1701.

No. 13: Adam Lebwald, *Damographia oder Gemsen-Beschreibung.* 8 vo., pp. 56, with illustrations. A facsimile of a seventeenth-century black-letter book, containing quaint description of the habits of the chamois and the story of Maximilian's adventure on the Martinswand.

VARIOUS NOTES

Wyoming Rockies

Seventy-three ascents were made in Grand Teton National Park during the past season—almost twice the 1932 total and by a good margin the largest number for any one season thus far. Climbing began on June 24th and closed on September 17th, ascents being distributed as follows: Three in June, thirty-one in July, thirty-three in August, and six in September. The Grand Teton was climbed thirty-seven times (as compared with fifteen times in 1932, twenty-six in 1931, and thirteen in 1930); Teewinot, ten times. The remaining twenty-six ascents were scattered among seventeen peaks, including a few which are seldom visited (e.g., Fossil Mountain, Dike Needle, Rendezvous Peak, and Lillies Peak).

That each year an increasingly large number of foreign climbers visit the Tetons may be taken to indicate a growing interest in this range abroad. The past season there were climbers in the park who registered from Bulgaria, Austria, Germany, England, Scotland, Tasmania, and Australia. Another interesting feature of the 1933 season was the succession of truly remarkable climbs made by boys in the early teens. These have been reported elsewhere.[1]

Of the thirty-seven ascents of the Grand Teton, twenty were guided (by Petzoldt, Exum, and others) and seventeen guideless. The first one-day traverse of the peak from Jackson Hole was made on July 25th by Allyn Hanks and the writer (a traverse from Jenny Lake, using the southwest ridge and the traditional route). On July 30th, Sam Younger and Albert Strube, two boys from the Beaver Dick camp of the Citizens Conservation Corps, climbed the Grand Teton by the traditional route; on top, failing in their efforts to recover their route of ascent, they decided perforce to attempt to get down the mountain by the southeast face. Though entirely inexperienced and virtually unequipped, after extreme difficulty and great hazards they managed to descend to Garnet Canyon; and after a three days' absence they returned, quite exhausted, to the Beaver Dick camp. Thus to them came, unsought, the distinction of being the first in history to descend the Grand Teton by other than the traditional route.[2]

---

[1] *Appal.*, Dec., 1933.

[2] The accounts furnished by Younger and Strube are not easy to follow, though there can be no doubt that a descent was actually accomplished by the southeast. Phil Smith believes that their route corresponded only in part with that employed by the Underhill-Truslow-Smith party (July 15th, 1931) in ascending the peak from this angle. A fuller discussion of the Younger-Strube descent will be published later.

S. B. Hendricks and Paul Petzoldt on July 3rd made successive traverses of Nez Perce, Cloudveil Dome, the pinnacles to the west, and the South Teton. The base for this strenuous expedition was in the head of Garnet Canyon, and the "hour-glass route" was used (for the first time) in gaining the east ridge of Nez Perce. The following day they continued this string of traverses by ascending the Middle Teton from the saddle to the south and descending it by the north face.

Rolling Thunder (10,900 ft.), the most remote peak in the Grand Teton Park and consequently the only peak of any importance within the park still unscaled, was traversed from north to south on August 15th by Phil Smith and the writer.

FRITIOF FRYXELL,
(Grand Teton National Park).

♠

The Teton Range. Our member, F. M. Fryxell, whose interest in this range is well known, has made a relief model of the range and the neighboring Jackson Hole, which was on exhibition this past summer at the Century of Progress Exposition in Chicago.

♠

The Teton National Park Museum at Jenny Lake has recently obtained a number of original paintings of Thomas Moran, whose pictures helped to make the Yellowstone known to the nation when it was but little more than a name.

♠

SOUTHWESTERN COLORADO CLIMBING NOTES—1933

Southwestern Colorado was again the center of considerable climbing activity as well as the location of the first work of the San Juan Mountaineers Geological Survey. The Sneffels section was that covered by the survey (yet incomplete). An interesting part of the surveying was during the triangulation work from Sneffels' summit. A camp was established upon the summit of the peak (14,168 ft.) and equipped with food for two days. Before all work was completed a storm broke. Rather than break camp and again have the work of returning to the summit with the heavy instruments, the party (T. M. Griffiths, L. V. Giesecke and the writer) decided to attempt to outlast the weather. Towards the close of the fourth day a retreat was forced; food had given out the day before. On the descent, in thick fog, two of the party were slightly hurt by a fall.

The first high altitude club hut in Colorado was constructed in Blaine Basin (north of Sneffels) by members of the San Juan Mountaineers. It will accommodate four persons, being equipped

with a small stove, complete cooking outfit and dishes. Next season bunks and tables will be built and a floor put in. The structure is small but well built of lumber and sheet iron.

Sneffels Section

Blaine Peak (12,800 ± ft.) was ascended by the east face. This easy climb was made by T. M. Griffiths, L. V. Giesecke, B. M. Souder and the writer.

Aiguille Number One (12,900 ± ft.) was first ascended by T. M. Griffiths, L. V. Giesecke, B. M. Souder and the writer.

Aiguille Thumb (13,100 ± ft.) was first ascended by T. M. Griffiths, L. V. Giesecke and the writer. This needle is the most spectacular of the northwest aiguilles of Sneffels.

The Biscuit (12,368 ft.), a short rock upthrust, was first ascended by T. M. Griffiths, L. V. Giesecke, B. M. Souder and the writer.

Reconnoitre Peak (12,997 ft.) was first ascended by T. M. Griffiths, L. V. Giesecke, B. M. Souder and the writer.

Gilpin Peak (13,700 ± ft.) was first ascended by T. M. Griffiths and L. V. Giesecke.

Wolcott Peak (13,400 ± ft.) was first ascended by L. V. Giesecke.

Peak T-O (13,700 ± ft.) was first ascended by T. M. Griffiths.

Cirque Mountain (13,700 ± ft.) was ascended (second ascent) by members of the S. J. M. G. S. in connection with their triangulation work.

Mt. Sneffels (14,168 ft.) was ascended by the northeast arête to the base of the east arête, which begins at the top of the little east face. The east arête was then covered in gaining the summit of Sneffels. The first large gendarme of the east arête was the most hazardous portion of this climb. Climbers were L. V. Giesecke (leader), T. M. Griffiths, C. C. Long and the writer.

Mt. Sneffels was also ascended directly by the central portion of the north face. A party of six made this climb. T. M. Griffiths was leader on the first rope, seconded by the writer, with Miss M. McClintock last. The second rope was led by L. V. Giesecke followed by Dr. H. L. McClintock and F. McClintock.

Aiguille Wolf Tooth (12,400 ? ft.) was first ascended and traversed by C. C. Long, L. V. Giesecke, T. M. Griffiths and the writer.

Needle Mountains

Mile-post 486 on the railroad through Animas Canyon was the meeting point of members of the 1933 expedition of the San Juan Mountaineers. On the afternoon of August 1st the expedition crossed the river by means of a cable car. Shortly after-

wards five heavily burdened persons (Messrs. C. C. Long, T. M. Griffiths, L. V. Giesecke, Dr. H. L. McClintock and the writer) could be seen trudging up the steep trail towards the heart of the Needles. Camp was pitched after dark that day. Next day the expedition reached an elevation of 10,750 ft., where base camp was established in a fringe of timber at the upper end of the second level stretch on Noname Creek.

The first climb was that of Peak No. 6 (13,600 ft.), a second ascent. Next came the first ascents of both needles that make up Twin Thumbs (13,400 ft.), and the first ascent of Peak No. 11 (13,500 ft.). During these climbs Jagged Mtn. (13,836 ft.) was examined for possible routes of ascent.

Finally the time seemed ripe to attack Jagged. The first attempt, made in bad weather, resulted in attaining the third highest of its summits. After a day of rest the high summit was ours for another first ascent. Jagged Mountain is probably the most difficult peak yet ascended in the Colorado Rockies. Mr. Long is to be congratulated for his splendid leadership on the climb.

Unfortunately Mr. Long could not be on hand the last climbing day. The other members started late for Monitor Peak (13,710 ft.), which did not permit a proper reconnaissance of the mountain and the first choice of a route failed.

After the failure the balance of the day was spent in reconnoitering Monitor and other mountains about the head of Ruby Creek, ending an easy climb to the summit of a little peak (Peak 12, 13,100 ft.), a probable first ascent.

Camp was broken the next day, the tenth spent in the Needle Mountains. Our chief objective lay beaten behind, Jagged has fallen the way all peaks shall in time.

DWIGHT G. LAVENDER.

SIERRA NEVADA OF CALIFORNIA

Mt. Humphreys. During the past summer an ascent of Mt. Humphreys, 13,972 ft., loftiest mountain in the Sierra Nevada north of the Palisades, was made from the east up a great cleaver-like ridge, involving an excellent rock climb of several thousand feet. The route follows the narrow crest, flanked on either side by precipitous drops of 1,000-1,500 ft. In places it is sharply dentated and about three-quarters of the way up the mountain there is a difficult pitch of about 75 ft. In order to surmount this with safety it is necessary to traverse to the left around a buttress, along a ledge which leads to a platform on the sheer south face of the peak. Several crevices leading up the steep wall above this enables one to gain the crest above the pitch.

From this point for several hundred yards the arête is jagged, involving interesting but not excessively difficult climbing. This is followed by another several hundred yards of rounded ridge leading up to the summit of the second highest peak, which drops down to the west into a notch from which a fairly difficult rock climb of several hundred feet up the east face of the final pinnacle brings one to its narrow summit.

For about 1,000 feet the descent was down a large chute descending in a southeasterly direction. A traverse was then made along a shelf to the crest of an arête running southward from the second highest peak of the mountain. From this a rather difficult headwall was descended to a deep and somewhat dangerous couloir which was followed to a small glacier in a cirque on the southeast face of the mountain. From the crest of the south arête to the glacier the route followed was an original one.

NORMAN CLYDE.

Sierra Club Outing, 1933. The annual trip of the Sierra Club this last summer reflected the increasing interest in high mountaineering in that organization. Two traverses of Mt. Humphreys were made, thirty-one persons climbed the summit pinnacle of Mt. Darwin and twenty-three reached the top of the seldom-visited Mt. Haeckel. Two new routes were found on the Devils Crags which had been climbed but twice prior to 1933, and the northwest ridge of the Middle Palisade was climbed for the first time as well as several ascents being made by the Farquhar-Hall route. Several ascents of the North Palisade were made and one party traversed to Mt. Sill. In addition, a number of first ascents were made on minor peaks. The 1934 outing is scheduled to be in Yosemite National Park and it is to be expected that club members will find a field for new climbs even in that relatively well-climbed-over section.

Middle Palisade (14,049 ft.). On July 30th, 1933, Jules Eichorn and Glen Dawson made the first ascent of the northwest ridge of this peak by traversing from the second peak of the Middle Palisade. Previously ascents have been made up the original Farquhar-Hall route on the west or Clyde's route on the north side from the glacier as described in *A. A. J.*, vol. i, pp. 395-99.

The Devils Crags (12,612 ft.). July 25th, 1933, marked the third ascent and the first by the northwest ridge, the party being led by Jules Eichorn. A new route on the west face, north of

Michael's route, was accomplished on the same day by H. H. Leschke, Ted Waller and John Poindexter. The third and second highest summits were climbed from the east on July 26th by Jules Eichorn, Ted Waller and Glen Dawson when they narrowly escaped disaster when caught by a rain storm on the mountain.

♠

Peak 13,332 (On the main crest between Mt. Darwin and Haeckel). The first ascent of this mountain was made from the west on July 19th, 1933, by Neil Ruge, Ballah Ballantine and Glen Dawson.

♠

The Cathedral Spires in the Yosemite were attempted late in the fall by Richard Leonard, Jules Eichorn and Bestor Robinson. They used a number of pitons and are still hoping to reach the top of the higher spire in a later attempt. The principal result to date, however, is a cinematographic record of spectacular climbing.

♠

The Minarets were the scene of a number of climbs effected by members of the search parties looking for Walter A. Starr, Jr., who lost his life in a solo attempt on Michael's Minaret. Norman Clyde, who found the body, and Oliver Kehrlein made two climbs on Clyde's Minaret. Richard Jones, Jules Eichorn, and Glen Dawson made the first ascent of Minaret No. 7 and later the latter two went completely around the massif.

♠

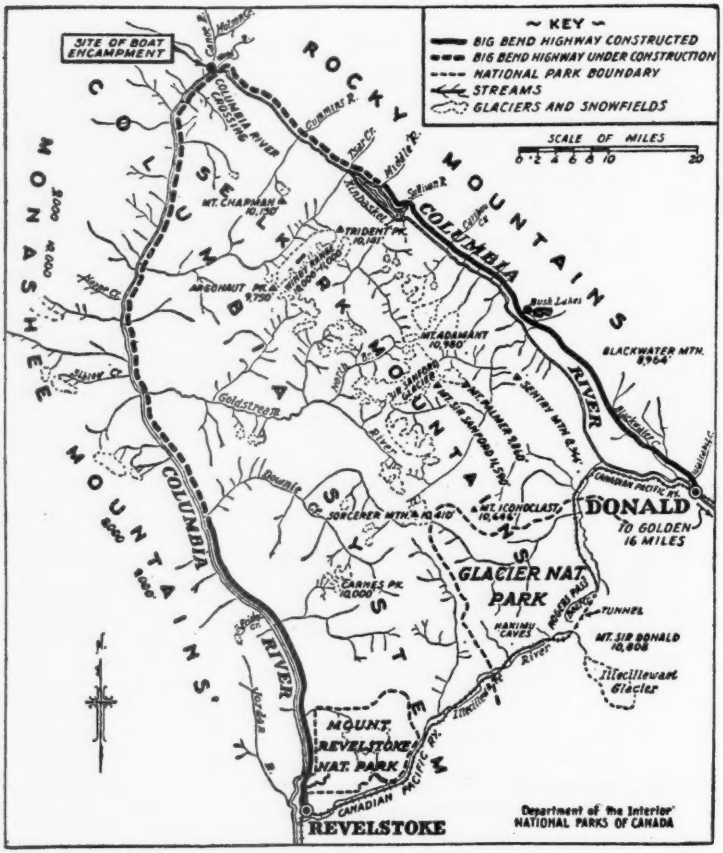
Basin and Range Province

Picacho, in California about twenty miles north of Yuma, Arizona, offers an interesting rock climb. On December 1st, 1933, John Poindexter and Glen Dawson made a new route directly up from the "crevice" near the regular route. Nearby, there are several lesser buttes which grade in difficulty from the easy into the improbable.

♠

Selkirk Range of British Columbia

The Big Bend Highway. When completed, the road between Golden and Revelstoke will establish a Canadian highway between the prairies and the coast, the Selkirk Range being the last barrier between roads already constructed from Lake Louise across Kicking Horse Pass, and in the Fraser Valley. At one time it was hoped that the old railroad route over Rogers Pass might be followed, but engineering difficulties and cost of maintenance were considered so great that the plan was abandoned



MAP OF BIG BEND HIGHWAY, COLUMBIA RIVER
(From Survey by Howard Palmer and Robert H. Chapman.)

in favor of the Columbia River Valley, a distance of approximately 192 miles.

Special progress has been made on the eastern leg of the route, which will do much to reopen the northern Selkirks, especially the Sir Sandford region, to mountaineers. In time to come it may be possible to penetrate to the Rockies from this side as well, through the valleys of Bush River and Tsar Creek, hitherto impracticable because of the dense forests and absence of trails. From the site of historic Boat Encampment, the valley of Canoe

River is accessible, while the western leg will offer points for observing the Monashee (Gold Range) Mountains.

Climbers who carry out exploration in the wake of this road construction will have the opportunity of making new ascents in a splendid district, with rewards comparable to those secured in the Rockies of the post-war years after the completion of the Interprovincial Survey.

♠

NEW TRAVERSE FROM HERMIT HUT. Miss G. Engelhard, *Ern. Feuz.* Leaving Hermit Hut at 5.30 A.M., August 27th, 1933, crossed Sifton glacier and traversed Mt. Grizzly (9,061 ft.; 3 hrs. 30 m.), an intermediate peak, and Mt. Ursus Minor (9,026 ft.), descending by its south arête to Baloo Pass and thence to Glacier. Total time 13 hrs.

A long traverse, broken by gendarmes, with no great difficulty, the climbing being on well-defined ledges, slabs and boulders. Rope used only twice, in descending pitches where the rock was slightly overhanging.

♠

MT. WHEELER (11,023 ft.). Third ascent; first from Glacier Circle hut. Miss G. Engelhard, *Ern. Feuz.* Leaving Glacier Circle hut at 5.00 A.M., September 13th, 1933, the lower tongue of Deville glacier was followed to foot of icefall, thence taking to cliffs on east face of Mt. Selwyn, climbing for about 2,000 ft. of good ledges and couloirs. Deville névé reached at 7.00 A.M. Thence we proceeded southward across it, past the Bishops Range, where we turned west and made our way up long, easy snow-slopes to the Wheeler-Kilpatrick col; thence up the north arête of Mt. Wheeler to the summit. Total time of ascent, 4 hrs. 55 m. Gorgeous panorama of Battle and Purity Groups. In descent we crossed Deville glacier just above the icefall, descending by a crack in the cliff on the Mt. Topham side, affording pleasant rock work. Time for descent, 4 hrs.

The ascent is an easy one, well worth while for its scenic beauty. The two previous ascents were made from bivouacs near Black glacier.

♠

POLAR EXPLORATION

H. G. Watkins, the young explorer, whose excellent work in Labrador and Greenland has been an inspiration to others in the scientific and geographic exploration of these regions, met a tragic death by drowning on the east coast of Greenland while out hunting in a kyak. As a memorial, a trust fund to assist young explorers at the beginning of their careers has been established and the men who followed Watkins in the British Arctic

Air Route Expedition have already subscribed over £300. Subscriptions and inquiries should be addressed to Mr. Augustine Courtauld, 33 Trafalgar Square, London, S. W. 3.

♠

ANDES

Lanin (12,390 ft., Lat. 39° 40′ S., Long. 71° 30′ W., on Argentine-Chilean boundary). The first ascent of this peak was effected on February 9th, 1933, by A. T. Howat and E. de la Motte. From a base camp at 3,600 ft. near the Tromen police station they placed a bivouac at treeline ca. 5,000 ft. on the northeast side. Starting from here at 2.00 A.M. the morning of the 9th they climbed directly to the top which was reached at 2.45 P.M. After an hour on the summit they descended, reaching their high camp at 7.10 and continued on down, but were forced on account of darkness and the dense woods to spend a second night out.

♠

Tronador. A reconnaissance of this peak with a view to finding the best approach was made by the same party that climbed Lanin. They forced a route up the Rio Tronador but found that one of the ridges which they had thought to be possible would be extremely difficult. This approach is, however, quite feasible and would lead to a good point from which the mountain can be attacked with a reasonable chance of success. The mountain itself has been attempted eight times by F. Reichert and the highest point reached was 11,400 ft. in 1931.

♠

The Polish Expedition to the Ranada Range on the Chilean-Argentine frontier, which has been in the field since the first of the year has succeeded in making a number of new ascents. On January 18th, 1934, S. Daszynski, A. Karpinski, W. Ostrowski, and S. Osiecki effected the first ascent of Mercedario (22,206 ft.), the second highest mountain in the western hemisphere. On February 9th, Ostrowski with J. R. Dorawski made the first ascent of Cerro Almane (20,075 ft.), and followed this up by making the first ascent the next day of Mesa (19,350 ft.), while on the same day, February 10th, Karpinski effected the first ascent of Cerro Ramada (21,025 ft.) alone.

♠

An Italian expedition to the Andes has been organized by the Club Alpino Academico Italiano under the leadership of Count Aldo Bonacossa. We understand that the plans call for an ascent of Aconcagua and Cerro del Plomo. The party hope to make a complete ascent of the Tronador (see above) and the Cerro

Morado near Santiago, which in spite of five attempts has not yet been climbed.

♣

Alps

Ski Traverse. A remarkable traverse of the entire range on ski was made last year by L. Zwingelstein from Grenoble to Vorarlberg and back, practically the entire trip being made alone. The complete excursion took from February 1st to May 1st and is the more noteworthy as a number of ski ascents of peaks was included in the itinerary.

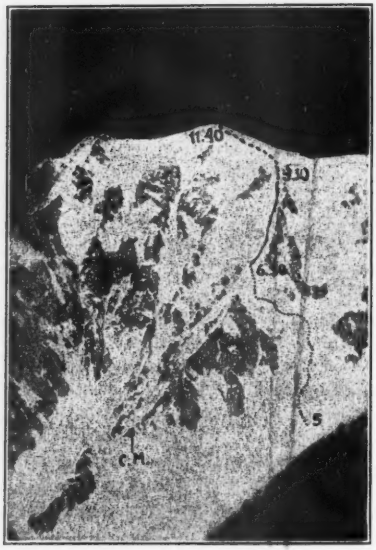
♣

Grosse Zinne. The north face of this forbidding pillar, one of the most impossible looking walls in the Dolomites, has at last succumbed to the "hardware" technique that in the Eastern Alps goes under the name of rock-climbing. A number of attempts have been made but on August 10th the guides, Josef Dimai and Dibona, with 90 pitons, 50 karabiner, over 750 ft. of climbing rope and 500 ft. of small line, made an attempt which placed them fairly high up on the wall. The next day they were joined by the amateur, Emilio Comici, and the guides, Angelo Dinai and Antonio Verzi, who brought with them a large number of pitons and karabiner and over 400 ft. more rope. The combined party was again forced back and the guides, Dibona and Verzi, gave up in disgust, but nothing daunted, the remaining three set out again on August 13th and after a night spent on the wall succeeded in completing the ascent. A German paper chronicles the climb as "die Erste Durchnagelung" of the north wall and we are inclined to agree that probably the conquerors are better blacksmiths than rock-climbers. They should certainly be made to join the quarrymen's union. Their work must, however, have been of an inferior quality as the two brothers, Peter and Paul Aschenbrenner, who repeated the ascent a month later, September 11th-12th, reported that many of the pitons were unusable owing to their looseness.

♣

The Brenva Face of Mt. Blanc in 1933

The good condition of the ice climbs during most of the 1933 campaign made this climb rather popular. On July 25th the writer left Courmayeur in the afternoon with Evaristo Croux to spend the night at the Pavillon of Mt. Frety. On the following day we traversed the Aig. de la Brenva (3,274 m.) from the Glacier d'Entrèves over the northwest ridge and the west face. The descent was made by the southeast ridge and the west face to the Brenva bivouac of the C. A. A. I. On the following day (July 27th) the Tour Ronde (3,792 m.) was traversed from the Brenva glacier, with an acrobatic jump over the large bergshrund



THE BRENVA FACE FROM THE TOUR RONDE, JULY, 1933

..... Couloir Gussfeldt.
——— Ice arête (route Moore).
- - - - - - Route Coolidge, directly through the upper seracs to summit.
C. M. Col Moore.
The numbers indicate time.

to reach the Glacier du Géant. After a few hours' rest at the Rifugio Torino the party left at 12.35 A.M. and crossed the Col. Est de la Tour Ronde by an extremely steep ice couloir, where a rock fall was experienced, although the night was very cold. The bergshrund at the base offered some difficulty. The summit of the col was reached at 4.10 A.M. and at 5.00 A.M. the party was at the base of the Gussfeldt couloir. This spectacular ice trough, hemmed in by threatening seracs, appeared to be sufficiently safe to be taken as a direct route to the summit ridge of the Grand Éperon. This was reached in about one and one-half hours. The inclination of this portion of the climb is not great and the difficulty generally less than in the upper portion of the climb or in the couloir of the Col Est de la Tour Ronde.

The Moore route was then followed to the upper seracs which were reached at 9.10 A.M. From here the party cut directly to the left through the upper seracs and then followed the steep upper slopes directly to the summit which was reached at 11.40 A.M. The most difficult portion of the ascent was the passage of the upper portion of the seracs, where the party was subject to an ice fall, which fortunately went wide over their heads.

This route represents probably the most direct way to the summit of Mt. Blanc coming from the Glacier du Géant, it being the combination of three of the known routes, that is, the Gussfeldt couloir at the base, the Moore route over the icy arête of the middle portion, and the Coolidge route through the upper ice cliffs.

The descent was made by the way of the Bosses, the Dôme and the Glacier du Dôme to the Dôme hut (Rifugio Gonella) which was reached at 5.00 P.M., after much wandering around

the large crevasses in the Glacier du Dôme. The traverse is of great interest and difficult enough to tempt any well-trained party.

In the same season the following other ascents were completed: Aig. Trélatête (trav. four summits); Dôme de Miage (trav. five summits); Aig. de Bionnassay (trav. in the record time of three and one-half hours from the Rif. Durier to the Col de Bionnassay, including halts); Aig. Noire de Peuterey (in one day from Courmayeur); Aig. de Talèfre; Aig. de la Varappe; Aig. du Chardonnet (trav. northeast arête to Col Adams Reilly); in the Ampezzo Dolomites: Torre Grande (via Miriam).

M. M. Strumia.

Report of the Fourth International Congress of Alpinism in Cortina d'Ampezzo (Italy) September 9th to September 14th, 1933

The Congress was opened on September 9th by S. E. Angelo Manaresi, President of the Italian Alpine Club and of the Fourth International Congress of Alpinism. Immediately afterwards there was a general assembly of the representatives of the Alpine Clubs and Societies when the various members of the four sections were elected. The four sections were I Alpinism, II Alpine Tourism, III Science related to Mountains, and IV Art related to Mountains. Your representative was made secretary of the section on Science related to Mountains (III). At the same time the constitution of the U. I. A. A. (L'Union Internationale des Associations D'Alpinisme) was drafted. The constitution and by-laws of the U. I. A. A. were discussed on several occasions and finally approved at the last meeting.

The representatives spoke as a rule in the language of their own countries. It was, however, decided that all of the report would be published in the four official languages, that is, French, English, Italian and German. Your representative at the last meeting of the U. I. A. A. accepted for the American Alpine Club the affiliated membership (see article 4 of the by-laws).

The various sections then met during the following days and various papers were read and discussed. Several of these are of great practical importance. Your representative feels that a point of great importance which has not been given enough emphasis is the organization of a uniform system for emergency squads to help Alpinists in case of accident, and we propose herewith that such point be made part of the program of the next International Congress, which will take place in the late summer of 1934 in Switzerland.

On the afternoon of September 14th your representative presented three movie reels of climbing in the Canadian Rockies and

for many of the members it was the first view of this important region.

The most pressing question, that is the opening of frontiers, was forcibly kept out of discussion, or at least it was not discussed nearly as thoroughly as it should have been.

The Congress closed with a dinner offered by the Italian Alpine Club to the representatives of the various Alpine Clubs.

M. M. STRUMIA.

A NOTE ON ANCIENT CRAMPONS

Simler, in his *De Alpibus Commentarius* (1574), says "people are accustomed to tie iron shoes, like those of horses, and furnished with three sharp prongs, securely to their feet, so that they may get firm foothold on the ice; others furnish the thongs, by which the sandals are tied under the foot, in the same way, with a very sharp iron spike, and employ other means in order to resist the slipperiness of the ice and to improve their footing."

Climbing-irons are represented pictorially for the first time in *Theuerdank* (1517), descriptive of the adventures of Maximilian I, being of sandal form attached by two straps across the foot. The prongs, four in number, are arranged as if on the corners of an oblong, two under the anterior arch of the foot and two beneath the heel. In some of the pictures no binding is shown, as if the spikes were attached directly to the shoe. In the chamois-hunting plate of *Weisskunig,* the four-pronged sandal is attached by a single strap over the arch of the foot.

Several unusual climbing-irons are shown in the *Historia de gentibus Septentrionalibus* (1555) by Olaus Magnus, the plate being produced in Grand-Carteret's *La Montagne à travers Les Ages* (1902, i, 98).

A primitive four-pronged crampon, in one piece, with a ring on each side for attachment, is shown by Scheuchzer in his *Itinera Alpina* (1708), while a "Sandal with Cramp Irons," the prongs restricted to the heel, but with elaborate lateral supporting bars and binding, occurs in Saussure's *Voyages* (1779-96), and is reprinted in *An Atlas to Ebel's Traveller's Guide* as late as 1819. In Pieth and Hager's *Placidus a Spescha* (1913), there is a reproduction of a small three-pronged heel-iron dating from the early part of the nineteenth century.

Until recently, archæologists have believed that the ancestral type of these irons was represented by certain objects associated with burials of the Hallstatt culture (700-400 B. C.) in Salzburg and Carinthia, it being assumed that foot-irons were used by Celtic miners.

One of these, from E. von Sacken's *Das Grabfeld von Hallstatt* (1868), is reproduced in A. Steinitzer's translation of Sim-

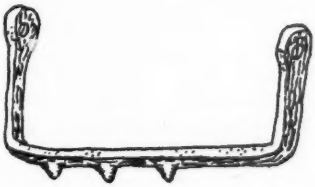
ler's work for the Gesellschaft Alpiner Bücherfreunde (1931). Its construction is simple: a horizontal bar, with three equally spaced conical points, and two short lateral uprights, the extremities of which are broadened and pierced for attachment. (Fig. 1.)

According to Lord Conway (*A. J.* 32, p. 455), "Other examples of not much later date [than the Hallstatt specimens] were found at Karlstein, near Reichenhall, and at Ottmanach in Carinthia. Crampons were also used by the Gauls in Roman days, and several examples which were found at Mont Beauvray (Bibracte) are to be seen in the Musée Saint-Germain-en-Laye. . . . Crampons were probably a Celtic invention and carried to Gaul by Celtic immigrants."

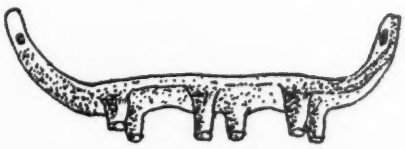
Recently, in New York, the collection of prehistoric antiquities, excavated by the late Duchess Paul Friedrich of Mecklenburg, was dispersed, affording opportunity for examining an iron of somewhat different pattern.

Occurring as a pair, the objects are from a tumulus at Magdalenaberg, near St. Marein in Carniola, where they were associated with horsemen's equipment, and are, therefore, described not as climbing-irons but as spurs. The metal is bronze.

The horizontal portion of the bar is equipped with three pairs of truncated-conical prongs, the tips of which show no signs of wear. The curved lateral supports are perforated at the tips. (Fig. 2.)



1.



2.

Size reduced about one-half

Neither type cited would be easy to attach firmly to the foot; they are much too wide and would be as awkward to walk on as to strike a horse with.

Mr. Eaton Cromwell, who examined the specimens in New York, states: "I am quite at a loss to imagine their probable

use. The apparent lack of wear would seem to preclude their use as crampons—they would probably have been too expensive as well, for a purpose for which wooden cleats would have been equally useful and serviceable. Yet they must have been meant to serve some useful purpose, as they do not seem very ornamental. They are equipped with holes to be fastened with, but to what object? I believe they must be primitive stirrups, the more so as they are found in conjunction with horse-trappings."

This, however, controverts the statement of the *Encyclopedia Britannica* that the earliest evidence of the use of stirrups in Europe is to be found in the *Art of War* of Emperor Maurice (A. D. 582-602). At least, this recent information does not add to the authenticity of supposed Iron Age crampons.

J. M. T.

♣

REVIVAL OF "LINDA DI CHAMOUNI" AT THE METROPOLITAN

This opera, one of the few in Alpine setting, was the delight of our forefathers. Donizetti wrote it on command for production in Vienna in 1842, and it was given in London at Her Majesty's Theatre on March 25th, 1843. Persiani, Mario, Brambilla, Fornasori and Lablache were in the cast of the London performance at Drury Lane, January 12th, 1848.

The American première took place in Palmo's Opera House, New York, in 1847; and it was also given at the Academy of Music during the mid-'80's.

Time, 1760, Louis XV; place, Chamonix and Paris. Three Acts: I, Departure; II, Paris; III, Return. Acts I and III are laid in the village of Chamonix. *Linda's* famous soprano aria "O luce di quest' anima" is sung in the first act, the part being taken by Adelina Patti, with an Italian company, in the New York performance at the Metropolitan on April 23rd, 1890.

The story is that of the French drama, *La Grâce de Dieu*, performed at the St. James's Theatre, London, in the early '40's. Albert Smith translated it as the "Pearl of Chamouni" for one of the minor London Theatres. The St. Bernard dog, which he later presented to Charles Dickens, was named "Linda."

The Chicago Opera Company, with Galli-Curci in the title part, gave the first New York performance of the opera since Patti's day at the Lexington Theatre, February 4th, 1919.

In the Metropolitan revival, March 1st, 1934, the leading rôle was taken by Lily Pons; Mmes. Swarthout and Vettori, and Messrs. Crooks, De Luca, Pinza, Bada and Malatesta in the cast; Serafin conducting.

J. M. T.

Library of Empress Marie Louise

In 1933 there was dispersed in Berlin (Martin Breslauer) a group of books which once formed part of the library of Empress Marie Louise, second wife of Napoleon I, later Duchess of Parma, Piacenza and Guastalla.

During the negotiations of the Allies in Paris, the representative of Austria returned the books to the Empress, who, as Regent of Parma, continued to collect. Like his wife, Napoleon was particularly fond of works of natural science, and was fond of showing such books to the King of Rome, later to become the unhappy Duke of Reichstadt.

The following Alpine books were listed:

Alt. *Das Pittoreske Oesterreich* (Vienna, 1840-46).

Bacler d'Albe. *Souvenirs Pittoresques* (Paris, 1818).

Brockedon. *Illustrations of the Passes of the Alps* (London, 1828-29).

D'Haussez. *Alpes et Danube* (Paris, 1837).

Schultes. *Reise auf den Glockner* (Vienna, 1804).

These are all bound in red half morocco, and bear on the covers the crowned monogram ML. Since Alpine books in armorial or special bindings of this character are extremely rare, we have secured the fourth item listed above (D'Haussez) for the American Alpine Club library.

J. M. T.

Caucasus

Swiss Expedition. Four members of the Alpine Ski-club Zürich and the S. A. C. with a subvention from the latter club made a mountaineering trip in the Caucasus this past summer. Under the leadership of Paul Bühler, Walter Rickenbach, Lorenz Saladin, and Werner Weckert set out on June 18th, 1933, to make a number of climbs in the Bezingi and Adai-Khoh groups. They were joined by Otto Furrer, who, however, became ill and remained in hospital at Naltshik. Leaving this town on June 30th they went in via Balkar and Karaulka. On July 2nd they attempted to cross the Shtulu Pass but found it impossible for pack animals on account of snow. They set up a base camp and made an attempt on Sugantau which was frustrated by bad weather after a night in an ice cave. On July 7th they planned to traverse Doppachtau, Suganbashitau and Sugantau. They reached the summit of Doppachtau at 6.00 P.M. in cloud and snow and in descending, Bühler, who was the last man on the second rope, called for the rope to use as a rappel but at this juncture must have slipped as he fell and disappeared from sight. The other three were forced by the weather to bivouac shortly after-

ward but descended the next day and found the body on the glacier where they buried it at a height of 4,200 m. In spite of this mishap, the rest of the party afterward crossed the range and effected fourth ascent of Ushba.

♣

A French Expedition, sponsored by the G. H. M. and the C. A. F., was also in the Caucasus this past summer. It was composed of Raymond Gaché, Jacques Lagarde, Robert Tézenas du Montcel, and Lucien Valluet. They arrived in Naltshik on August 8th and their objective was to explore the peaks in the vicinity of the Ullu-Auz Glacier. Their first climb was a long traverse which resulted in the first ascent of Tiutium-Bash (East Peak 4,500 m.; West Peak 4,551 m.), Gortü-Bash (4,437 m.), and Breithorn (4,246 m.). Two of the party with a Russian, G. Marietsky, then made the first ascent of Kilmet-Bash (3,906 m. and 3,965 m.), while the other two effected the first ascent of the square tower of Koshtantau and were in a fair way to make a new route on this latter peak by way of the north ridge when they were forced to turn back on account of an accident which fortunately was not serious.

♣

Mountaineering Expeditions in the Soviet Union During 1933

Interest in mountaineering and mountain exploration in the Soviet Union has been increasing from year to year. It is looked upon not only as a valuable form of recreation but also as an activity through which much scientific research can be conducted. Practically all the work is done under the joint auspices of the Society of Proletarian Tourism and the Academy of Sciences. The following information was obtained in Tiflis and Moscow from reports and lectures as well as through personal interviews with members of the various expeditions. It is believed that this data in its important details are substantially correct.

During 1933 many first-class ascents were made in the various mountain ranges including the Caucasus, Altai, Tian Shan, and Pamir. Soviet citizens who now include among their number several expert alpinists accounted for nearly all the big climbs accomplished.

The Caucasus. Winter ski expeditions into the highest sections of the Caucasus which were begun in 1931 were continued during the winter of 1932-33. Three mountain skiing expeditions composed of both men and women were sent from Tiflis into the main range. The first of these visited the districts of Racha and Lower Svanetia in the Central Caucasus, the second crossed the

main range of the western part of the Eastern Caucasus in Khevsuratia, and the third visited South Ossetia.

Other ski expeditions crossed the main ridge of the Central Caucasus by way of the Sharivsek, Mestia, and Betsho Passes, all over 11,000 ft. high. One of these also reached the saddle between the two peaks of Mt. Elbruz at an elevation of 17,450 ft. —the first time this has been done in winter and doubtless one of the highest winter climbs ever made.

In June an expedition climbed Kasbek using skis to an altitude of 14,700 ft. During the summer it is reported that 110 persons reached the summits of Mt. Elbruz (18,470 ft. and 18,347 ft.). The majority of these were red army commanders who in one gigantic party of fifty-seven scaled the mountain *en masse*.

Both Koshtantau (16,880 ft.) and Shkara (17,038 ft.), among the highest as well as the most difficult peaks in the Caucasus, were climbed for the first time by citizens of the Soviet Union or of the former Russian Empire. Tetnuld (15,918 ft.) was climbed twice and the very difficult ascent of Tiktingen (15,918 ft.) was almost accomplished by two men who reached a point within two hundred feet of the summit. The three peaks of Dongusorun (all over 14,000 ft.) were also reached. Many other climbs were made during the summer, including a number of first ascents.

Two parties of foreign alpinists visited the Caucasus in 1933. A French group attempted Koshtantau by the northeast side but failed to get above an altitude of about 15,000 ft. A Swiss party reached the South Peak of Ushba (15,409 ft.), still considered one of the finest and hardest climbs in the Caucasus despite the fact that it has now been done at least four times. One of the members of this group was killed earlier near the summit of Doppach (14,420 ft.).

♠

Altai Mountains. The ascent of Belukha (5,500 m.), the highest summit of the Altai, was first attempted before the Great War. A Soviet expedition in 1932 also failed to reach the top. In 1933 the highest or East Peak was reached by a large party composed of both men and women.

The first ascent of another peak known as Tikhtu (4,200 m.), near Belukha, was also accomplished by this party.

♠

Tian Shan Mountains (Northeast of the Pamirs). Following the recent expeditions culminating in the successful ascent in 1931 of the giant peak Khan Tengri (6,990 m.), an expedition was sent out in 1933 to explore the western part of the range. Its members climbed Peak Manas (5,630 m.) and Peak Kurkurel (5,470 m.). They reported that there are other peaks in this region that are as high, and that the summit of one known as

Peak Chatkal (ca. 5,700 m.), they consider inaccessible by ordinary mountaineering methods due to its nearly perpendicular hard rock walls affording no hand- or foot-holds.

♣

Pamirs. Beginning with the German-Russian Expedition of 1928 there have been to date five expeditions to the Pamirs. In 1928 the German alpinists of the expedition climbed the peak Merzbacher had named Mt. Kaufmann (7,130 m.), believing it to be the highest elevation in the Soviet Union. It was accordingly re-named Peak Lenin. From the summit was seen to the southwest, in the group known as Peter the Great Range, a high summit which was mistakenly identified as Peak Garmo (6,615 m.). Actually the map in the first edition of Younghusband's, "The Heart of a Continent," published in 1896, shows Mt. Kaufmann (now Peak Lenin) marked as 23,000 ft. high and to the southwest another elevation of 24,935 ft. For some reason this information was overlooked by the Russian mountaineers until 1931, when an expedition set out for Peak Garmo and discovered that the imposing summit seen from Peak Lenin was an entirely separate mountain higher than either. An expedition in 1932 definitely determined the position and altitude of this new highest elevation in the Soviet Union, and named it Peak Stalin. Its altitude is 7,495 m. or about 24,600 ft.

In the summer of 1933 a large expedition was sent to the Pamirs with the task of climbing Peak Stalin and setting up two meteorological stations as high as possible on its slopes. The approach to the mountain from the north is complicated by the necessity of having to cross the Muksu River, which, due to the heavy discharge from the melting glaciers, is extremely formidable throughout the spring and early summer. Thus it was not till mid-summer that the expedition could get under way. From the town of Osh in Tadjikistan, a four and a half days' trip was required to reach the terminus of the Fedchenko glacier, said to be forty-eight miles long, the largest in the U. S. S. R. Six horses loaded with equipment and supplies were then taken about thirteen miles up the glacier to the foot of Peak Stalin, where the base camp was established, at an altitude of 4,600 m. The climbing party consisted of eight alpinists and some native porters for work on the lower parts of the mountain. Besides the necessary climbing equipment, the party carried two portable meteorological stations, each weighing twenty-five pounds.

The first climbing camp was established at 5,400 m. Here the party lost one day due to bad weather. The third day, the second climbing camp was established at 5,600 m. At this point the hardest part of the climb began with an 800 m. ridge of hard steep ice broken by six very difficult gendarmes. The ice slopes

required almost continual step cutting and the gendarmes, which all had to be either traversed or circumvented, required the use of pitons and rope ladders. To add to the difficulty and danger, the gendarmes were composed of extremely bad rock affording poor holds and continually threatening to become dislodged. Here one member who was chairman of the Moscow Mountain Climbers group fell to his death. He had charge of carrying one of the meteorological stations and had taken it off his back to clear a route up a section of particularly bad rock. He was unroped at the time. In pulling away a loose rock he dislodged a large piece above it which rolled over, and flung him down the 500 m. slope. This accident was quickly followed by a second misfortune, for, while hunting for the body, another member of the party, a well-known Soviet athlete, caught a severe chill which later developed into pneumonia.

In spite of these accidents, steady progress up the mountain was made. The difficult 800 m. was ascended in three days with a climbing camp, the third, at 5,800 m., the fourth at 6,000 m., and the fifth at 6,400 m. Here the meteorological station was established. At this point the leader, Gorbunov, who was over forty years of age, was advised by his companions not to go higher. He replied that as they were not out for a record-breaking sport event, but fulfilling a scientific task set by the Soviet Government, he would continue higher. (Actually he proved to be one of the two men who finally reached the top.)

A sixth camp was made at 6,800 m., where two days were lost due to a heavy snow storm. At this point those below lost sight of the climbing party. On the tenth day of the ascent the final or seventh camp was established at 7,000 m.

Meanwhile further difficulties had arisen. Another man had one of his hands severely crushed when a piece of loose rock fell on it and only by dint of great control and the quick action of the others was saved from falling to his death. The accident made it impossible for him to continue the climb. Two other members of the party were also incapacitated at this point by mountain sickness and frozen feet.

Thus only three men started up the final 500 m. to the summit. The remaining meteorological station was proving increasingly difficult to carry and finally was set up and left at the 7,200 m. level. Continuing the climb toward the summit, another man was soon forced to give up due to the effect of the altitude on his heart. The other two, the oldest and the youngest on the expedition, went on and late in the afternoon of September 3rd reached the summit in almost exhausted condition. The last stretch was made very slowly and much of the time by crawling on hands and knees. A few observations were quickly made, photographs taken, and a record of the ascent placed in a food tin.

The descent was rapid and the 7,000 m. camp regained that night. Next day the combined parties reached the 5,600 m. level and the base camp a day later. The actual climb and descent of the peak had taken fourteen days. Five days later the party was back in Osh, having been gone a total of twenty-nine days.

There was stormy weather about half the time the party was on the mountain and considerable snow fell. As may be imagined, the temperatures recorded were very low; near the top the average was around 0° F. in the daytime and far below zero at night. The rock of Peak Stalin, as well as other mountains of Peter the Great Range, is extremely rotten and therefore particularly dangerous for a heavily loaded climbing party.

It is interesting to note that Peak Stalin (24,600 ft.) is the third highest summit that has been definitely reached. Kamet (25,450 ft.) being the first, and Minya Konka (ca. 24,900 ft.) the second.

More details should be given of that part of the work which had to do with establishing two high meteorological stations on the mountain, for this was one of the main objectives of the expedition. A central meteorological station had previously been located about sixteen miles up the Fedchenko glacier within thirteen miles of Peak Stalin, at an altitude of 4,857 m. (higher than the summit of Mont Blanc).

Here five men were stationed for year-round service, equipped with first-class instruments and a powerful radio apparatus for broadcasting the data obtained to the central meteorological stations of the U. S. S. R. It was to work in conjunction with this station, that two portable self-recording stations were built in Leningrad and set up on Peak Stalin at elevations of about 21,000 and 23,600 ft. These record temperature, barometric readings, and wind velocity by what is said to be an entirely new mechanism, as yet not fully tested. This unique apparatus has a windmill that generates electricity for an automatic radio sending equipment which periodically broadcasts the readings. These signals are then picked up by the main station on the Fedchenko glacier, where the data are properly correlated and relayed to the outside world by its powerful radio set.

These self-recording stations are expected to operate for about six months, after which there is doubt that they will be effective. At present it is hoped that another expedition may be sent to the mountain in 1934 to recover these stations and set them going again.

A second climbing party, under the leadership of Krylenko, the well-known attorney, made an attempt on Peak Krupski (6,200 m.). A party of three got to within 200 m. of the summit when a falling stone hit one of the group, breaking his rib, and making further advance impossible.

Complete reports of the mountaineering and scientific accomplishments of these Central Asiatic expeditions are being prepared in Moscow.

♠

Persia

The Italian Expedition composed of Ardito Desio, conte Leonardo Bonzi, Gaetano Polvara, cav. Vittorio Ponti, and Paolo Righini which set out by airplane on July 26th, 1933, to explore the mountains west of Isfahan has returned after having accomplished a vast amount of work but no account of their accomplishments has yet appeared. They were to explore the ranges on the Persian-Iraq border both from the air and on foot and had planned to make a number of climbs.

♠

Himalaya

Mount Everest. The expedition of this last summer led by H. Ruttledge and composed of C. G. Crawford, Captain E. St. J. Birnie, Major Hugh Boustead, P. Wyn-Harris, Dr. C. R. Greene, Dr. W. W. McLean, J. L. Longland, E. E. Shipton, E. O. Shebbeare, F. S. Smythe, G. Wood-Johnson, T. Brocklebank, and L. Wager left England somewhat earlier than the previous expeditions, the first party sailing January 20th. Leaving Darjeeling in two groups March 2nd and 8th, they combined at Gautsa the 21st and arrived at the Rongbuk Monastery on April 16th. The base camp was established the next day and the next month was spent in the advance up the glacier, which was hampered by bad weather so that the camp on the North Col was not set up until May 15th. Camp V at 25,700 ft. was established a week later and then bad weather again drove the party down so that it was not until May 29th that Camp VI was set up at an altitude of 27,400 ft. The next day Harris and Wager made a try for the summit, but after spending some time in trying to climb the second step in the ridge directly they were forced to traverse and owing to the shortness of the time left had to return to camp. On June 1st, Smythe and Shipton set out from the high camp to follow Norton's route which was now accepted as the best way, but after climbing several hundred feet Shipton gave out and Smythe pushed on alone for another hour, finally reaching an altitude of about 28,000 ft., when realizing the impossibility of reaching the summit and returning to camp turned back and picked up Shipton. They followed the ridge back to camp and found an ice-axe on the steeply sloping ledges just below the crest. This axe was a Willisch axe of which there were a number on the 1924 expedition and has been tentatively identified as Mal-

lory's. The high camps were abandoned on account of the bad weather and the whole party reunited at the base, but when there appeared to be a break that promised a brief spell of fair weather another attempt was made to occupy the North Col camp. The fixed ropes on the steep slope were buried under two feet of snow and the slope was in a very dangerous condition and so the attempt was definitely abandoned until fall. The Mt. Everest committee deciding that the chance of success in the brief fall season was remote, the entire expedition was recalled to England and the base camp was evacuated on July 2nd. The failure of the expedition to reach the summit may be ascribed as due to the very bad weather prevailing throughout the brief climbing season and the unduly short season caused by the fact that the monsoon arrived some two weeks earlier than usual.

The expedition which was to fly over Mt. Everest was unsuccessful in its first flight owing to a mistaken identity of the mountain, but on a second flight made without permission, they did fly over the highest peak in the world and returned by way of Kangchenjunga bringing back a fine collection of photographs.

After these two expeditions had returned there were several earthquakes in Nepal, Sikkim, and Tibet and now the story has gone forth that the gods are displeased at the temerity of the foreigner and have vented their displeasure in this way. This, coupled with the recent death of the Dalai Lama, may make it very difficult to obtain permission for another expedition in the near future.

The Marco Pallis Expedition in the Gharwal Himalaya effected a number of climbs around the Gangotri glacier. The party was composed of Marco Pallis, C. F. Kirkus, Dr. Charles Warren, F. E. Hicks, and R. C. Nicholson. Kirkus and Warren effected the first ascent of Satopanth Peak, 22,060 ft., while Hicks and Nicholson climbed an unnamed 22,000-ft. peak. Four other unnamed peaks between 19,000 and 21,000 ft. were also climbed. Later Pallis and Warren made the ascent of Liu Purgyal, 22,250 ft., on the Tibetan frontier.

*

Trisul, 23,360 ft., which for twenty years was the highest summit ever reached has just been climbed a second time, when on June 21st, 1933, P. O. Oliver and Kesar Sing effected its ascent. The first ascent was made on June 12th, 1907, by T. G. Longstaff, the Gurka Karbir, and the guides Alexis and Henry Brocherel.

*

Nanga Parbat is again in the limelight as a group of Germans set out to try the ascent again late in March of this year. The party is led by Willi Merkl, the leader of the German-American

Expedition of 1932, and is composed of Fritz Bechtold, Peter Aschenbrenner, Erwin Schneider, Ulrich Wieland, Walter Rächl, Peter Müllritter, with Dr. Bernard as physician, and Dr. Finsterwalder as topographer. They plan to use the same route developed by the former expedition. This party is composed of Germans only, no other nationalities being included.

♠

Prof. G. O. Dyhrenfurth, who will be remembered for his expedition to Kangchenjunga in 1930 is again leading an expedition to the Himalaya, this time to the Karakorum Himalaya. The party, which Marcel Kurz is accompanying as topographer left Genoa, March 25th, and expects to go in by the way of Srinagar, Zoji-La, Dras, Skardu, and Askole to the Baltoro and Godwin Austin glaciers in the neighborhood of which and the Siachen glacier they expect to do their work.

♠

The Saint Bernard Monks are reported to be making progress with their plans for a branch establishment on the Sila Pass on the border between Tibet and Szechuan. The group which went out in January, 1933, reported favorably on the project. The actual work of construction is expected to start this spring, although they have received a setback in the news that the Tibetan priest whom they had taught to act as a ski teacher to the natives has been assassinated.

♠

Photography and Distant Views

Some remarkable pictures of the Alps taken from the Puy du Dome and the Vosges at great distances appear in *La Montagne* for June, 1933. Mont Blanc at a distance of 305 km. and the Bernese Alps at distances of 180-230 km. among others. These pictures were taken on ordinary plates with heavy filters in contradistinction to the work of Major Stevens of the U. S. Army Air Corps, whose remarkable photographs on infra-red plates up to distances of over three hundred miles have attracted so much attention lately. The discussion of visibility at great distances has been continued in the February, 1934, number of the same periodical and the theoretical limits of visibility by the different colors is here given: Ultra-violet (by photography), 80 km.; blue, 150 km.; green, 250 km.; yellow, 300 km.; red, 500 km.

These distances naturally are shortened in actual practice by haze. A number of observations are given of mountains seen at tremendous distances and a plea made for more observations. We would like to repeat that plea here for, with the exception of Mr. E. G. Chamberlain whose panoramas from viewpoints in Massachusetts and New Hampshire are well known, very little work has been done in that direction in this country.

Lightning

One phase of this ever-interesting subject to the mountaineer has been taken up by Prof. E. Mathias in a recent issue of *La Montagne* (March, 1933) in an article on "Les phénomènes de la foudre ascendante et globulaire dans les montagnes et les plateaux élevés." He accounts for the rarity of this type of lightning at high altitudes by the air pressure and cold.

> "The pressure of the air in the mountains is but a fraction of the normal atmospheric pressure. The fulminant material which forms at approximately 2,500° C., where it is a blinding white with a very feeble tension of dissociation f, increases its tension in cooling. It necessarily decomposes when f clearly passes the atmospheric pressure. This dispersal temperature therefore rises rapidly with the altitude. At low altitudes, the temperature can be lowered to about 500° C. where the fulminant material, a body *optically black* dark red must decompose. When the altitude is sufficiently great so that the temperature does not sink below 1,200° C., the color is yellow, more or less pale; at higher altitudes the color of the fulminant material is practically white. . . . The blue coloration indicates the presence of sulphur."

We wish that more observations might be made on this subject and would like to see the results of research carried out by our members especially in the western mountains.

Accidents

The Accident on the Minarets. Walter A. Starr, Jr., left on July 29th, 1933, for a climbing trip in the Sierras alone. When he did not return on schedule, a search was instituted and first his car, then his camp was found obviously untouched for at least a week. Our former western vice-president, now president of the Sierra Club made a search from the air on a Standard Oil Co. plane and organized a group of climbers to make a search on foot. These men made a number of climbs in the course of their work, which have been chronicled elsewhere in this issue, and were finally successful in finding the body. Beyond the fact that he was killed in attempting the ascent of Michael's Minaret, but little is known of the cause of the accident.

The Accident on Mt. Jefferson. Labor Day week-end (September 4th-5th, 1933) three Portland, Ore., boys set out to climb Mt. Jefferson by the east face, a steep snow climb. The three, Davis McCamant, Don Burkhart, and John Thomas were first

missed on Tuesday morning when they failed to return, and search parties were immediately organized. After several days of intensive search, the bodies were found frozen into a crevasse just below the bergschrund of the Whitewater glacier and were recovered. They were still roped together when found and so the tragedy must have been occasioned by a slip on the part of one of the party, which is made the more probable by the bad conditions then existing, a new fall of snow on ice. Earlier in the summer there had been a minor accident on this side of the mountain when a C. C. C. youth fell owing to a hold breaking out and was crushed by the rock and his leg broken.

Glacier Studies

Travelers visiting mountains where glaciers occur have an opportunity of making valuable observations of these glaciers. One of the principal problems to determine is whether the glacier is experiencing a period of expansion or contraction. The best way to accomplish this is to make detailed observations and careful measurements, supplemented by a series of photographs. However, if circumstances make it impossible to do this, very valuable data can still be recorded by simply taking a series of photographs showing, (a) the condition of the ice surface, (b) the marginal areas, and (c) the exact position of the terminus with respect to certain nearby well-defined landmarks. The photographs are of greater significance if the exact points from which they are taken are marked and described, so that more may be taken from the same positions in future years. Such photographs, although requiring little time or effort, are likely to prove of great value in the study of the glaciers of that particular district, as well as the broader aspects of existing glaciation throughout the continent or even the world. It is hoped, therefore, that mountaineers will keep this in mind when planning a visit to regions where glaciers occur, and before undertaking such a trip, will familiarize themselves with the fundamentals of glacial research.

For general information on the subject, or suggestions with regard to the study of glaciers in United States territory, it would be advisable to communicate with Dr. Francois E. Matthes, United States Geological Survey, Washington, D. C., chairman of the Committee on Glaciers of the American Geophysical Union. If any studies of glaciers in Canadian territory is contemplated, one should communicate with Mr. A. O. Wheeler, chairman of the Glacial Section, Alpine Club of Canada, Banff, in order that any new observations may be made in accordance with the systematic study now being undertaken by that group.

The observations and photographs obtained should be correlated and then made available to all students of the problem.

To this end, it is suggested that all data be sent to Dr. Matthes so that the material may be properly filed and published in the Transactions of the American Geophysical Union as well as by the "Commission des Glaciers" in Europe. Material on glaciers of Canada should be sent to Mr. Wheeler.

It is anticipated that the *American Alpine Journal* will publish brief notes on the glacier studies made from year to year in the United States and Alaska, with special emphasis on the work done by members of the American Alpine Club. Complete reports when available will be placed on file in the Club library.

♠

Studies Made During 1933

During 1933 members of the American Alpine Club have made a number of valuable contributions to the study of North American glaciers. Several members from California have helped to form a Committee on Glaciers in the Sierra Club to organize this work in California. This committee, under the chairmanship of Oliver Kehrlein, began its activities during the summer of 1933. The season's work was largely of a preparatory nature, nevertheless the following glaciers were visited and described, and measurements were made on which to base future observations.

North Palisade Glacier. This glacier, the largest in the southern Sierra Nevada, is situated on the east side of the crest in Inyo County, Calif. It has a frontage or width of one and one-half miles with a maximum length or depth of seven-tenths of a mile. It occurs at an elevation of 12,500 to 13,000 ft. The condition of the glacier in August, 1933, is described in great detail so that it will be possible to record very slight changes that may occur in the future. The same observers had visited the glacier in September, 1928, and concluded that in the intervening five years, the ice level had been lowered several feet and slight changes had occurred in the appearance of the ice surface.

♠

Minaret Glacier. The small glaciers on the northeast face of the Minaret Range in the Sierras were also visited in August, 1933. Comparing the appearance of the largest of these tongues with that shown in a photograph made in 1923, suggests that a slight advance has taken place in these ten years. However, the glacier is so situated that it cannot advance far without its tongue avalanching over a cliff.

♠

Glaciers of Mount Shasta. Several of the glaciers of Mount Shasta were visited and described, and their present condition compared with earlier observations.

Fifty years ago the snout of *Wintun Glacier* is said to have reached the 8,000-ft. level, but since then it has retreated to a point above 10,000 ft.—a horizontal distance of several miles.

♣

Konwakiton Glacier was described and mapped by the early writers, but its lower portion as well as what is now *Mud Creek Glacier* were overlooked, apparently because they were covered with ash. At that time these glaciers must have been united and have extended from 1,000 to 1,500 ft. lower than the map indicated for Konwakiton Glacier. In 1924 profound changes occurred in these glaciers and their covering of ash largely disappeared. Between that year and 1933 the terminus of Mud Creek Glacier retreated 440 yds., which, according to the committee's report, is believed to have "been occasioned more by the breaking down of the supporting wall of ash underneath the snout, which disintegrates with infiltration of water seeping through the glacial ice, rather than by the melting of the ice front." The walls of the gorge below the present terminus have broken down to such an extent since 1924, that it is very difficult to identify the former positions of the terminus. In 1933 Konwakiton Glacier, which was formerly a tributary of Mud Greek Glacier, had become entirely separate.

♣

Important changes were also found to have been taking place among the smaller glaciers. The terminus of *Clear Creek Glacier* has retreated very considerably during the last few decades. Glacial ice in the southwest draw up which runs the Sisson Trail was reported by early explorers and topographers, and noted as late as 1923, but in 1933 had entirely disappeared.

♣

Glaciers of Yosemite National Park. Since 1931, C. A. Harwell, Yosemite Park naturalist, has made yearly observations and measurements of the glaciers of Mts. Lyell, Maclure, Dana, and Conness. The reports of this systematic study are of great value and set a high standard for others to follow.

A warm and prolonged melting period in 1933 greatly reduced all the glaciers of this district. Observations made in 1932 and 1933 at the various measuring stations show that during that year the termini retreated as follows: *Lyell Glacier* (east lobe), 18 ft., (west lobe), 7 ft. and 8 ft.; *Maclure Glacier,* 22 ft.; *Dana Glacier,* 67 ft. and 30 ft.; and *Conness Glacier* (east lobe), about 177 ft. The east lobe of Conness Glacier is reported to be very thin and so much reduced since 1932 that "a few light winters or heavy melting summers may cause this lobe to disappear entirely."

On Lyell Glacier was found a dead mountain sheep which had been imprisoned in the ice. At this point the rate of flow of the ice was found to be about one-fourth inch per day, at which rate it would have required about 240 years for the carcass to be transported from the cliffs at the head of the glacier.

♣

Correlating the observations of the glaciers over a period of three years with the data available on the meteorological conditions during that time has (quoting from Harwell's report) "demonstrated that summer melting and evaporating conditions are as important as the quantity of snow falling during the winter in determining advance or retreat of glacier fronts. It is as proper to speak of 'heavy' summers as it is to consider 'heavy' winters."

♣

SNOWFALL RECORD

The value of these studies on glaciers in California is greatly enhanced by the fact that systematic measurements of snowfall are now made periodically by the California Cooperative Snow Surveys. These show that in 1932 the snowfall was uniformly much greater than in 1933, a significant observation in view of the fact that the glaciers of the Sierras are reported to have advanced in the fall of 1932 and receded in 1933.

♣

ALASKAN GLACIERS

The expedition under the leadership of H. Bradford Washburn, Jr., to Mt. Crillon in the Fairweather Range made some interesting observations on the glaciers of the western slopes of the Fairweather and Southern St. Elias Ranges. Among the ice tongues viewed and photographed from the air were those of Disenchantment Bay and Russell Fiord. Little has been known of the behavior of these interesting glaciers since they were observed in 1913, so that the present observations when published will be of special significance.

♣

CONCLUSION

From the foregoing it is clear that a systematic study of the glaciers of North America and the meteorological conditions in their vicinity has been begun. It is highly desirable that this work should continue and be extended to every important group of glaciers on the continent so that the complete records may be correlated and published every year. Members of the American Alpine Club may play an important rôle in this work by making individual observations or helping to organize groups interested in carrying it on.

W. O. FIELD, JR.

EQUIPMENT

COMPLETE MOUNTAINEERING EQUIPMENT

Complete Equipment for

MOUNTAIN CLIMBERS, EXPLORERS, SCIENTISTS, ENGINEERS, HUNTERS AND TRAVELERS

We have recently equipped Colonel and Mrs. Lindbergh for their trip over the Greenland Ice.

This equipment is now exhibited, along with their plane, in the American Museum of Natural History in New York City.

We can equip you for your mountain climbing trip. Let us furnish estimates.

ANTHONY FIALA

47 Warren Street **New York City**

BOOKS

THOMAS B. HITCHCOCK

32 Fuller Street

BROOKLINE, MASS.

Mountaineering Books a Specialty

PRINTING

FREE PRESS INTERSTATE PRINTING CORP.

"Complete Printing Service"

187 College Street **Burlington, Vermont**

Please mention this magazine when writing advertisers

OPP. PAGE

Mt. Foraker—The Route to Camp IV 285
North Peak of Foraker 290
Entire Party at Camp II 290
Panorama from Spyglass Hill 291
The Whole Great Face of the Mountain 294
Reconnaissance on the Ridge 294
Camp VII 295
Icefall from Plateau above Camp VII 295
Panorama from N. W. Peak of Mt. Waddington 300
Franklin Valley from the Glacier 302
Mt. Waddington from Franklin Glacier 302
Mts. Dauntless and Vigilant across Franklin Glacier 303
Climbing Camp 303
Mt. Waddington from Dais Glacier 304
N. W. Peak from 12,600 ft 304
Summit Tower of Mt. Waddington 305
N. W. Peak from 11,000 ft 305
Bush Mountain 308
Bush Mountain 309
Below the Summit of Mt. San Gorgonio 326
On the Descent of Mt. San Gorgonio 326
Agazzi Needle, Sierra Nevada 327
Ascending Bishop Pass, Sierra Nevada 327
The Last 100 ft. to the Top of Mt. Adams 330
Mt. Baker, Washington, Seen from Table Mountain 330
Mt. Aye from Mt. Gloria 331
Mt. Assiniboine, South Face from Mt. Aye 331
Brenta Group and Bocca di Brenta 346
Guglia di Brenta and Cima Margherita 346
Cardinal Salm's Expedition to the Gross Glockner 347
Emperor Maximilian Hunting Chamois 347
Certificate of Ascents to The Jardin and Grand Mulets 354
Certificate of Ascents to The Jardin and Mont Blanc 355
Certificate of Ascent of Mont Blanc 363
Certificate of Ascent of Mont Blanc 367
Mt. Robson from the Railroad 418
Summit of Mt. Robson 418
View Northward from Mt. Robson 419
Final Arête of Mt. Robson 419

OPP. PAGE

Dogs of the National Geographic Society's Yukon Expedition 427
Members of the National Geographic Society's Yukon Expedition 430
The Inflated Boat 430
Flying the Dogs in from Kluane Lake 431
The Lower Base Camp 431
The Dog Team of the Yukon Expedition 434
Rescue of the Dogs 434
Ascending Lowell Icefall Above Base Camp 435
Mt. Logan from the Slopes of Mt. Alverstone 435
Mt. Lucania and Mt. Steele 442
Mt. Steele and Wolf Creek Glacier 442
The Upper 9000 ft. of Mt. Steele 443
Peaks South of Wolf Creek Glacier 443
Mt. Logan and Mt. Walsh 446
Peaks of St. Elias Range 446
Peaks 10,000 ft. High Forming Eastern Fringe of St. Elias Range 447
Mt. Wood 447
Summit of Mt. Steele 448
Mt. Lucania from Mt. Steele 448
Garinda Camp, the Highest Camp 449
Cairn and Cross on Top of Mt. Albert Edward 449
Porters Leaving Pieters Hut 456
Mawenzi from 14,500 ft. 456
Kibo from 14,700 ft. near Mawenzi 457
View N. E. across Crater 457
Main Divide, E. Forks of Foss River 462
West Slope, Mt. Shuksan 462
Main Divide, N. W. Peak of Mt. Black 463
East Slope, Mt. Silver Star 463
West Slope, N. and E. Face of Mt. Shuksan 468
Main Divide between Mt. Boston and Mt. Buckner 468
N. Wall of Mt. Whitehorse 469
West Slope, Mt. Baker from Table Mountain 469
West Peak of Mt. Buckner 474
Boston Glacier 474
Willis Wall, Mt. Rainier 475

OPP. PAGE

East Ridge of Mt. Fox 482
Deville Glacier 482
East Face of Monte Rosa 483
Descent on Ryan's Rib 483
Route from Marinelli Hut to Nordend 483
Crossing the Mer de Glace in 1885 488
Mer de Glace and Montanvert from the Chapeau 488

PORTRAITS

Allen Carpé 46
Henry Greer Bryant 108
Henry Fairbanks Montagnier 234
Conrad Kain 236
Conrad Kain 237
Tom Wilson 242
Dr. Israel Tisdale Talbot 362
Dr. William Oxnard Moseley 362
Henry Fairbanks 362
Charlotte Fairbanks 362
George Heard 366
Augustine Heard 366
Joseph Story Fay 366
John Ritchie 2nd 366
Henry Baldwin de Villiers Schwab 384
John Edward Owens 510
James Kent Stone 510
W. A. B. Coolidge 510
Meta Claudia Brevoort 510
John Wilkinson 511
Joseph Mickle Fox 511
Dr. James Bourne Ayer 511
Oliver Wendell Holmes 511

MAPS AND DIAGRAMS PAGE

Minya Konka (route of ascent) ..... *opp.* 3
Sketch Map of the Yangtze Basin 3
Analysis of Conquest of Mt. Minya Konka 11
Northern Slopes of Mt. McKinley 49

PAGE

Sketch Diagram of Crevasses and Footprints (Carpé-Koven accident)..... 57
Southwestern British Columbia.....*opp.* 88
Minya Konka Region..... 137
Map of the Northern Big Horns..... 171
Purcell Range, Howser-Bugaboo Divide..... 186
Routes from Peyto Lake..... 207
Map of the Big Bend Highway, Columbia River..... 260
The Brenva Face from the Tour Ronde..... 264
Crampons 267
Analysis Ascent of Mt. Foraker..... 296
Sketch Map of a Portion of the Coast Mountains (B. C.).....*insert* 299
Mt. Steele Area, Alaska..... 438

CORRIGENDA

VOLUME II

Page 91, upper ill. opp., read "Whitesaddle" for "Whiteface."
Page 92, line 11, read "Middle" for "Twist."
Page 285, transpose lines 23 and 24.
Page 303, upper ill. opp., read "Glacier" for "Glaciers."
Page 362, third paragraph, line 4, for "1884" read "1834"; line 4 from bottom, for "1836" read "1886."
Page 364, second paragraph, line 8, for "tien" read "lieu."
Page 368, under No. 30, line 6, for "as glad" read "am glad."
Page 370, under No. 42 delete bracket "[?John Wilkinson (1821-91 . . .]."
Page 371, line 3, for "1809" read "1819."
Page 373, under No. 66 for "see No. 51" read "see No. 49."
Page 418, upper ill. opp., read "August 28" for "August 8."
Page 470, line 18, for "wistled" read "whistled."
Page 510, under No. 151 for "August 24th" read "August 14th"; line next to bottom, for "1874" read "1879."
Page 512, under Monte Rosa, line 9, for "Gressosey" read "Gressoney."
Page 514, line 4 from bottom, for "1870" read "1890."